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IN THE

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, A. D. 1938.

THE MAYTAG COMPANY,
Petitioner,

vs.

HURLEY MACHINE COMPANY and ELECTRIC HOUSEHOLD UTILITIES CORPORATION,
Respondents.

No. 76 - 77

THE MAYTAG COMPANY,
Petitioner,

vs.

EASY WASHING MACHINE CORPORATION,
Respondent.

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT

AND

BRIEF IN SUPPORT THEREOF.

THOMAN C. MAYNE,
WILLARD S. LAVE,
OSCAR W. CHEYFITZ,
NEWTON CRANE,
Counsel for Petitioner.

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No. .....

PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SECOND CIRCUIT.

To the Honorable Charles E. Hughes, Chief Justice of the United States, and the Associate Justices of the Supreme Court of the United States.

Your petitioner respectfully shows:

I.

SUMMARY STATEMENT OF MATTER INVOLVED.

Petitioner is the owner of the Snyder patent No. 1,866,779, issued July 12, 1932.* Claims 23, 26 and 29 of this patent were held invalid in the instant consolidated (R. 143-4) cases by the Court of Appeals for the Second Circuit, and valid

* Copy, and infringing devices shown at end of Brief.

in the case of petitioner against General Electric Supply Corporation in the Eighth Circuit by the District Court for the Western District of Missouri (now pending on appeal). There is pending in the Third Circuit a suit brought by the Apex Electrical Manufacturing Company and Montgomery Ward & Co., Inc., against petitioner, seeking a declaratory judgment holding these claims invalid and not infringed.*

The Snyder patent was issued after a protracted interference proceeding in the Patent Office (six years) between one Unruh and Snyder, in which not only the question of priority but that of invention over the prior art was vigorously contested and repeatedly determined in favor of Snyder (*Unruh* v. *Snyder,* 49 F. (2d) 1038; Findings, Judges Byers and Otis, App.,** pp. 7, 23, 24).

Snyder solved "a long and recognized want" which skilled engineers of the washing machine art had struggled with, without success for more than a century. (Findings, Judges Byers and Otis, App., pp. 3, 4, 5, 22.) His invention relates to a new (gyrator) type of washing machine in which the clothes are washed by a vigorous water action which suspends, manipulates and rapidly moves them freely about in the water, as distinguished from rubbing, pounding and squeezing them in the tub with and by mechanical means as was done in washing in all previous types. (Findings, Judges Byers and Otis, App., pp. 3, 4, 23.) His machine was so superior to any of the preceding types, due to its ability to wash clothes thoroughly clean,

* In a previous suit brought by petitioner against Brooklyn Edison Company in the Eastern District of New York, claims 23, 26 and 38 of this patent were held valid and infringed. On appeal, the Court of Appeals held these claims invalid. It did not pass on infringement. Petition for certiorari was denied by this Court on February 15, 1937, and a disclaimer of claim 38 was filed in the Patent Office promptly thereafter.

** Refers to separate Appendix to Petitioner's Brief.

without injury, and in from one-third to one-half the time required for washing them in any of the previous types, and its ability to wash delicate fabrics which could not be washed in machines of previous types without mutilation, and has become so popular in households throughout the country that it has largely supplanted all previous types of machines. Since its introduction in 1922 petitioner has sold more than three million machines of this new gyrator type. (Findings, Judges Byers and Otis, App., pp. 5, 25, R. 155.)

During the early years of its introduction it was ridiculed and scoffed at by competing manufacturers who appropriated it only when unable to sell their old types of machines, even with extensive advertisement and vigorous pushing in competition with it. (Findings, Judges Byers and Otis, App., pp. 6, 12, 24; R. 324, 183:) Among the largest manufacturers of washing machines who thus appropriated the Snyder invention were the 1900 Company, Easy Washing Machine Corportion, Hurley Machine Company, Altorfer Brothers Company, and the General Electric Company.

THE BROOKLYN EDISON CASE IN THE SECOND CIRCUIT.

In March, of 1933, petitioner brought suit for infringement of the Snyder patent, against the Brooklyn Edison Company, sellers of the Easy, Hurley and Altorfer machines, in the Eastern District of New York, resulting in a decision by the District Court (Judge Byers) on July 17, 1935 (11 F. Supp. 743) holding claims 23, 26 and 38 of the Snyder patent valid and infringed. The defendant appealed. On November 30, 1936, the Court of Appeals reversed that decision and without disturbing the finding of infringement held these claims invalid solely on the disclosures

of Jardine British patent No. 18,202 of 1891, Davis patent No. 1,240,826, of September 25, 1917, both of which had been considered by the Patent Office, and Doughty & Davis patent No. 1,496,305, of June 3, 1924,* and machines made under the latter two (86 F. (2d) 635). It refused to witness demonstrations of any of these machines, or those of petitioner or defendant, though this was requested by petitioner.

The Court of Appeals failed to follow the findings of the District Judge, who, after witnessing demonstrations of each of these machines, and hearing the conflicting testimony with respect to their operations, had held (R. 91-94, inc., App., pp. 7, 10):

(a) That the machines shown in the patents relied upon by the Court of Appeals to invalidate the Snyder claims did not operate in the manner disclosed and claimed by Snyder or like the machines of petitioner and defendant.

(b) That Snyder had made his invention eight months prior to any work done by Doughty and Davis on the machines of their patent upon which the Court of Appeals partially relied to defeat the Snyder claims.

The evidence shows that the 1900 Company, manufacturer of the Davis and the Doughty & Davis machines, took a license under the Snyder patent and has made large quantities of the licensed machines since to the exclusion of all others (R. 386).** Shortly after the Snyder invention came upon the market, that company completely abandoned the manufacture and sale of both the Davis and Doughty & Davis machines (R., 351-2, 368-370, 371-373, 461).

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* See Appendix, pp. 48, 52, 56.

** The evidence was that the Doughty and Davis machine was the result of an earnest effort by the 1900 Company to remedy defects in, and overcome the failure of the machine of the Davis patent.

THE EIGHTH CIRCUIT CASE.

February 5, 1937, while the petition for certiorari to this court in the Brooklyn Edison case was pending, petitioner filed suit against the General Electric Supply Corporation in the United States District Court at Kansas City, Missouri, charging its General Electric machines with infringing claims 23, 26 and 29 of the Snyder patent. The defendant in that case in its attempt to defeat Snyder's claims relied principally upon the same Jardine, Davis, and Doughty & Davis patents, and the machines made under the latter two, as were relied upon by the Court of Appeals for the Second Circuit in the Brooklyn Edison case, but Judge Otis after witnessing numerous demonstrations of these machines and hearing conflicting testimony with respect thereto found and held (App., pp. 25-33, inc., 36-39, inc.):

(a) That none of them did or could wash clothes in the manner described and claimed by Snyder and that each differed radically from his machine in construction and operation.

(b) That Snyder reduced his invention to practice and used it more than eight months before the earliest date claimed for the disclosure or use of the machine made under the Doughty & Davis patent.

Judge Otis thus reached the same conclusions as did Judge Byers in the Brooklyn Edison case. The defendant has appealed to the Eighth Circuit Court of Appeals from the decree in that case adjudging these claims valid and infringed. The record is still in course of preparation and the case cannot be heard before the time to apply for a writ of certiorari in the instant cases will have expired.

THE PRESENT SECOND CIRCUIT CASES.

In April, 1933, and October 21, 1935, respectively, petitioner filed suits against Easy Washing Machine Corporation and against Hurley Machine Company and Electric Household Utilities Corporation, charging infringement of the Snyder patent.

Feeling obliged to follow the decision of the Court of Appeals of the Second Circuit (R. 1414, 1437) in the Brooklyn Edison case, *supra*, Judge Coxe at the close of a trial of short duration in which none of the depositions were read, without opinion, ordered decrees in the present cases, holding claims 23, 26 and 29 of the Snyder patent invalid. The appeals from these decrees came before the Court of Appeals for the Second Circuit on an agreed single transcript of record R. 1456). That Court, adhering to its previous decision, held these claims invalid, and on April 21, 1938, denied a petition for rehearing (R. 1480). It is that decision which petitioner seeks to have reviewed by this Court.

THE THIRD CIRCUIT DECLARATORY JUDGMENT CASE.

Nearly a year prior to the decision of the Court of Appeals for the Second Circuit in the Brooklyn Edison case, and while the decree of Judge Byers holding the Snyder patent valid and infringed was still in force, the Apex Electrical Manufacturing Company, an Ohio corporation, and Montgomery Ward & Co., Inc., an Illinois corporation, as co-plaintiffs, brought suit (December 27, 1935) in the District Court of Delaware against petitioner for a declaratory judgment to hold the Snyder patent invalid and not infringed by machines made by the Apex Electrical Manufacturing Company, some of which were sold by its co-plaintiff.

Petitioner filed an answer and counter-claim giving rise to substantially the same issues as those involved in the instant cases. It has had to resist many preliminary motions and proceedings without a trial on the merits having yet been reached.

QUESTIONS INVOLVED.

Conflict between the courts of different circuits presents the following questions:

1. Whether the Circuit Court of Appeals for the Second Circuit erred in decreeing claims 23, 26 and 29 of the Snyder patent in suit invalid and in not holding each of them valid and infringed as decreed by the District Court in the Eighth Circuit.

2. Whether the Circuit Court of Appeals for the Second Circuit erred in holding claims 23, 26 and 29 of the Snyder patent invalid on the authority of its previous decision in *The Maytag Company* v. *Brooklyn Edison Company, Inc. case* (86 F. (2d) 625) on the Jardine British patent No. 18,202, the Davis patent No. 1,240,826, the Doughty & Davis patent No. 1,496,-305, where the trial court, after witnessing demonstrations of the machines of these patents and seeing and hearing witnesses with respect thereto in that case, had found that none of them embodied the structure or were capable of operating in the manner disclosed and claimed by Snyder.

3. Whether the Circuit Court of Appeals for the Second Circuit erred in holding the Doughty & Davis patent and the machines made thereunder as an anticipation of the Snyder invention, where the trial court had found from the evidence of witnesses who testified before it that Snyder made his invention months before any date claimed for Doughty & Davis.

4. Whether the Circuit Court of Appeals for the Second Circuit erred in not treating the findings of fact of the trial court, with respect to the matters presented under questions 2 and 3 above, as unassailable under the rule of this Court that such findings should be so treated where there is evidence to support them. *Davis* v. *Schwartz,* 155 U. S. 631, 636; *Adamson* v. *Gilliland,* 242 U. S. 350, 353.

II.

REASONS FOR GRANTING THE WRIT.

1. Because of the limited time allowed for the presentation of petitions for certiorari to this court under U. S. C., Tit. 28, Sec. 350, unless this Court consents to review the decision in the instant cases, the decrees of the Second Circuit Court of Appeals will become final and these respondents, two of the largest washing machine manufacturers in the country, will have an unfair advantage over the rest of the public, for they will be relieved from any obligation to pay for the large numbers of washing machines using the Snyder patented invention already sold by them, and free to make and sell them in the future, while the rest of the smaller washing machine manufacturers might be restrained from so doing, if, as a result of the appeal to the Eighth Circuit Court of Appeals and the prosecution of the suit in the Third Circuit the claims here in controversy be held valid by this Court. In view of these circumstances, and the conflict between the decision of the Court of Appeals for the Second Circuit and the decision of the District Court for the Western District of Missouri (reaching the same conclusion as Judge Byers in the Eastern District of New York) on the question of the validity of the claims in controversy, in order that the rights of the petitioner, the

various parties to the pending litigations, and the public, with respect to the subject-matter of the Snyder patent in suit be settled, uniformly, without further delay, expense and burdensome litigation, it is important that the petition herein sought be granted.

2. Because of the conflict between the action of the Court of Appeals for the Second Circuit in disregarding findings of fact of the District Court (in the Brooklyn-Edison case on which its present decree is predicated) based on conflicting testimony of witnesses testifying before it, and the decisions of other Circuit Courts of Appeals and this Court, holding such findings unassailable in the absence of a showing of want of evidence supporting them. *Alabama Power Co.* v. *Ickes,* 302 U. S. 464, 477; *Adamson* v. *Gilliland,* 242 U. S. 350, 353; *Davis* v. *Schwartz,* 155 U. S. 681, 636; *Trane Co.* v. *Nash Engineering Co.,* 25 F. (2d) 267, 268 (C. C. A. 1); *Reinharts, Inc.* v. *Caterpillar Tractor Co.,* 85 F. (2d) 628, 630 (C. C. A. 9); *Union Trust Co.* v. *White Motor Co.,* 22 F. (2d) 821, 822 (C. C. A. 6); *Star Can Opener Co.* v. *Bunker-Clancey Mfg. Co.,* 41 F. (2d) 142, 144 (C. C. A. 8). When determining the appeal from the decision of the District Court for Missouri in the General Electric Supply Corporation case the Court of Appeals for the Eighth Circuit will probably be bound by the findings of fact of the trial court under Rules 52 and 86 of Rules of Civil Procedure for the District Courts of the United States.

3. Because of the conflict between the action of the Court of Appeals for the Second Circuit in holding claims of a patent invalid on prior patents including a foreign one, which fail to disclose the subject matter of such claims, and decisions of other Circuit Courts of Appeals and this Court holding that a "a patent is to be

measured as anticipatory not by what might have been made out of it, but by what is clearly and definitely expressed in it." *Carson* v. *American,* 4 F. (2d) 463, 465 (C.C.A.9); *Donner* v. *Sheer Pharmacal Corp.,* 64 F. (2d) 217, 220 (C. C. A. 8); *Skelly Oil Co.* v. *Universal Products Co.,* 31 F. (2d) 427, 431 (C. C. A. 3); *Morley Machine Co.* v. *Lancaster,* 129 U. S. 263; *Stead Lens Co.* v. *Kryptok,* 214 Fed. 368 (C. C. A. 8), and cases there cited.

Wherefore, petitioner prays that Writs of Certiorari issue under the seal of this Court directed to the United States Circuit Court of Appeals for the Second Circuit, sitting at New York, New York, commanding said Court to certify and send to this Court on a day to be designated, a full and complete transcript of the record and all proceedings of the Circuit Court of Appeals had in these causes, to the end that each of these causes may be reviewed and determined by this Court; that the judgment herein of the Circuit Court of Appeals be reversed; and for such other further relief as may seem proper.

THOMAS G. HAIGHT,
WALLACE R. LANE,
OSCAR W. JEFFERY,
BENTON BAKER,
Counsel for Petitioner.

State of Illinois, County of Cook, ss:

WALLACE R. LANE, being duly sworn, deposes and says that he is attorney for petitioner herein, and that the allegations thereof are true as he verily believes.

WALLACE R. LANE.

Subscribed and sworn to before me this 31st day of May, 1938.

I. V. CURRAN,
Notary Public.

NOTARIAL SEAL

BRIEF IN SUPPORT OF PETITION.

Jurisdiction.

Petitioner would invoke the jurisdiction of this Court under Section 240 (a) of the Judicial Code as amended by Act of February 13, 1925, U. S. C. Tit. 28, Sec. 347, to review the decree of the Court of Appeals for the Second Circuit entered April 4, 1938 (R. 1461, 1462), affirming decrees of the District Court (S. D. N. Y.) dismissing the bills of complaint filed by petitioner against the respective respondents (R. 1410, 1433). The order denying petition for rehearing was entered ~~February 25,~~ April 21, 1938. This petition is presented within the time allowed by statute.

Statement.

The foregoing petition contains a summary of the material facts necessary to an understanding of the reasons relied upon for the allowance of the writ, as well as a statement of the questions involved in the case.

Specification of Errors.

The Second Circuit Court of Appeals erred:

1. In failing to decree claims 23, 26 and 29 of the Snyder patent No. 1,866,779 valid, in holding them invalid over the disclosures of Jardine British patent No. 18,202 of 1891, Davis patent No. 1,240,826 of September 25, 1917, and Doughty & Davis patent No. 1,496,305 of June 3, 1924, in dismissing the bill and awarding costs to respondents, and in not reversing the decrees of the District Court with costs.

2. In affirming the decrees of the District Court upon the authority of its previous opinion in *Maytag* v. *Brooklyn Edison case* (86 F. (2d) 625), in which it failed to follow the findings of fact of the trial court that none of the machines of Jardine British, the Davis, and the Doughty & Davis patents, or the machines made under the latter two, operated in the manner disclosed and claimed by Snyder, and in failing to follow said findings.

3. In failing to hold, as did the trial court on the same evidence in the Brooklyn Edison case, that Snyder reduced to practice and used the invention of his patent in suit prior to any disclosure or use of the machines disclosed in the Doughty & Davis patent 1,496,305, issued June 3, 1924, nearly two years after Snyder filed his application.

Argument.

I.

The federal statutes and decisions of this Court, which make it necessary for petitioner to now file this petition in order to protect its rights with respect to the Snyder patent owned by it, are:

1. U. S. C., Tit. 28, Sec. 350, requiring that an application for writ of certiorari be made within three months after the entry of the judgment or decree sought to be reviewed.*

2. *Ensten* v. *Simon, Asche & Co.*, 282 U. S. 445, requiring that, under the disclaimer statutes (Secs. 65

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* U. S. C., Tit. 28, Sec. 350.

"No writ of error, appeal, or writ of certiorari, intended to bring any judgment or decree before the Supreme Court for review shall be allowed or entertained unless application therefor be duly made within three months after the entry of such judgment or decree."

and 71, Title 35 U. S. C.)** where a court has held certain claims of a patent invalid, the owner of the patent must act with such promptness as the circumstances permit to vindicate his position, or to file a disclaimer with respect thereto, as the provisions of the disclaimer statute "were intended to protect only those who by prompt action either seek to overturn an adverse ruling or retreat from a false position." See, also, *Triplett* v. *Lowell*, 297 U. S. 638, 642, 646.

Unless this Court consents to review the decision in the instant cases, the respondents, two of the largest washing machine manufacturers in the country, will be free to use the Snyder invention in the future without compensation, and be absolved from any liability for damages or profits arising from their infringement, even though ultimately as a result of the appeal to the Eighth Circuit Court of Appeals and the prosecution of the suit in the Third Circuit, the claims here in controversy be held valid, and even though this Court should ultimately so hold, for under the above statutes and the decisions of this Court a petition filed after the three months allowed by the statutes could not be considered.

Under such circumstances the patentee would be de-

** U. S. C., Tit. 35, Sec. 65.

"Disclaimer. Whenever, through inadvertence, accident, or mistake, and without any fraudulent or deceptive intention, a patentee has claimed more than that of which he was the original or first inventor or discoverer, his patent shall be valid for all that part which is truly and justly his own, . . . and any such patentee . . . may, on payment of the fee required by law, make disclaimer of such parts of the thing patented as he shall not choose to claim or to hold by virtue of the patent or assignment. . . . But no such disclaimer shall affect any action pending at the time of its being filed, except so far as may relate to the question of unreasonable neglect or delay in filing it. (R. S. Sec. 4917.)"

U. S. C., Tit. 35, Sec. 71.

". . . But no patentee shall be entitled to the benefits of this section if he has unreasonably neglected or delayed to enter a disclaimer. (R. S. Sec. 4922.)"

prived of his exclusive right to make, sell and use the invention throughout the United States given him by the grant of his patent, and respondents would have an undeserved advantage over other and smaller manufacturers of washing machines.

Where, as here, a patent was issued only after an expensive and protracted (six years) interference litigation before the Patent Office, in which not only the question of priority but a consideration of the same art upon which one court relied to defeat the invention was passed upon, and certain claims were sustained by the trial court in one circuit, and the Circuit Court of Appeals reversed that holding and the court in one circuit has held the claims of a patent invalid; where under the requirements of the statutes and decisions of this Court with respect to disclaimers, the owner of the patent has brought suit to vindicate his position with respect to these claims which it believes to be valid and has succeeded in doing this in another circuit, thereby creating a clear conflict of decisions; where the patent owner will be deprived of that vindication with respect to certain defendants on account of the limited time in which review may be sought by this Court under the statutes; where the subject-matter is of such importance that other large manufacturers and sellers of the machine in controversy have brought suit for declaratory judgment in a third circuit to determine the validity of the patent; and where there is a direct conflict between the decision of the Court of Appeals in one Circuit, on one hand, and a decision in a District Court in another Circuit, we respectfully submit that this Court should exercise its discretionary right to review and settle the controversy with respect to that subject-matter, in order that the rights of petitioner, the various parties to the

pending litigation, and the public be settled, uniformly and without further expense and burdensome litigation.

II.

The decisions and decrees affecting the Snyder patent here in controversy that of necessity have to be given consideration are those of—

(1) Judge Byers in petitioner against Brooklyn Edison Co., in the Eastern District of New York, (11 F. Supp. 743), and the Court of Appeals for the Second Circuit in the same case, (86 F. (2d) 625).

(2) Judge Otis of the District Court of Missouri, unreported (App., p. 13).

(3) Judge Coxe (R. 1410, 1433) and the Court of Appeals for the Second Circuit in the instant cases, unreported (R. 1458).

The necessity for the consideration of the decisions in the Brooklyn Edison case is due to the fact that in the instant cases Judge Coxe (R. 1414, 1437) predicated his findings and decree "upon the authority" of the Court of Appeals in that case, as did also that Court in its decision in the instant cases (App., pp. 1458, 1461).

III.

The issue with respect to the valdity of claims 23, 26 and 29 of the Snyder patent, over which the conflict of decision arises, resolves itself into the questions

(a) whether these claims involve invention over the disclosures of Jardine British patent No. 18,202, of 1891, the Davis patent No. 1,240,826, of September 25, 1917, and the machines made under the latter; and

(b) whether the machines of the Doughty & Davis patent No. 1,496,305, of June 3, 1924, should not be eliminated from consideration because they were not originated until subsequent to the proved date of the Snyder invention.

The Snyder patent relates to a new (gyrator) type of washing machine, in which clothes are rapidly washed without injury by the vigorous water action which suspends, manipulates and rapidly moves them about in the water as distinguished from the previous (rubboard, dolly, cylinder, oscillator and vacuum cup) types, in and by which the clothes were dragged, rubbed, pounded and squeezed by mechanical means which damaged them (R. 160-1, 293, 326, 152). Once the Snyder invention was put upon the market by petitioner, it abandoned the previous types it had been making (R. 155), and has since sold over three million of these machines (R. 155).

During the early period of its introduction, the Snyder invention was scoffed at by competitors attempting to sell the old type machines (R. 155, 634, 183, 199, 324). Only after it came to be demanded by housewives in preference to any of the types that preceded it (R. 227, 160, 326, 273-4, 178, 328), did competitors, including the respondents and other manufacturers involved in litigation over the Snyder patent, appropriate it and make it to the substantial exclusion of all other types (R. 328). It has supplied a long and recognized want (Findings, Judges Byers and Otis, App., pp. 7, 23, 24).

This situation was fully appreciated by Judge Byers and Judge Otis in the Brooklyn Edison and General Electric Supply litigations, each of whom so found and held after watching repeated demonstrations of the Snyder invention and the machines of the prior art and

hearing conflicting testimony with respect thereto (Findings, App., pp. 6, 7, 23, 24). The Court of Appeals for the Second Circuit, disregarding these findings of Judge Byers in the Brooklyn Edison case and without witnessing demonstrations of the machines, held the Snyder patent invalid simply on the disclosure of the Jardine British patent No. 18,202 (App., p. 46), the Davis patent No. 1,240,826 (App., p. 48) and machines made under it, and on the Doughty & Davis patent No. 1,496,305 (App., p. 52) and the machines made under it, even though the trial court had held and found from conflicting testimony that Snyder made his invention before the earliest date claimed for Doughty & Davis (R. 91-94, inc.; Findings, App., pp. 7, 10).

The Court of Appeals in the instant cases affirmed the decrees upon the authority of its own decision in the Brooklyn Edison case, despite the fact that Judge Otis had adopted the opinion of Judge Byers after giving due consideration to it and the opinion of the Court of Appeals in the Brooklyn Edison case, as required by this Court in *Triplett* v. *Lowell,* 297 U. S. 638, 644 (App., p. 14), and after he had watched demonstrations similar to those made before Judge Byers of machines made in accordance with the Jardine British, the Davis, and the Doughty & Davis patents, and heard conflicting testimony with respect thereto (App., pp. 25-33, inc.; 36-41, inc.), and had found that none of them utilized the Snyder construction and did not and could not operate in the manner disclosed and claimed by Snyder (App., pp. 29, 33, 41), and after Judge Otis had also found from the testimony of witnesses taken in open court before him that—

> "Snyder's reduction to practice and use of his invention in May of 1920, was more than eight months before the earliest date claimed by defend-

ant for the disclosure or use of the 1900 Company's Form 4 machine made under the Doughty & Davis patent. The Doughty & Davis machines can not be used as an anticipation of Snyder." (App., p. 41.)

IV.

The errors of the Court of Appeals with respect to the validity of the Snyder claims in controversy and the conflict of its opinion with that of Judge Byers and Judge Otis are shown by statements made in its opinion in the Brooklyn Edison case, which it substantially adopts as its opinion in the instant cases, concerning:

(a) The machines disclosed and claimed in the Snyder patent;

(b) Statements showing that it disregarded the plain limitations of the Snyder claims in interpreting them;

(c) Attributing to the Jardine British patent operations neither disclosed nor described in it; and of which Judge Byers said (11 F. Supp. 743, 752:

"One can read the Jardine patent closely and often and yet not find any teaching whatever of a device to perform the operation of washing according to what Snyder says he invented."

(d) Accepting at face value statements contained in the Davis patent, despite the fact that the machine disclosed in it was of the old rubboard type (abandoned by its makers, the 1900 Company, before it took a license under the Snyder patent), having a different construction and operating in a different manner from that of Snyder, as had been previously found by Judge Byers who had witnessed demonstrations of it and heard conflicting

testimony concerning it (11 F. Supp. 743, 751) and as was later found by Judge Otis under similar circumstances (App., pp. 25-31, inc.);

(e) Its failure to follow the findings of Judge Byers that Snyder had made his invention and reduced it to practice months prior to the earliest date claimed for the Doughty and Davis machine.

(a) With reference to the Snyder invention the errors which have brought about the conflict of decisions are well illustrated by the following:

Judge Byers found and held in the Brooklyn Edison case upon which the Court of Appeals decided the instant cases (11 F. Supp. 743, 745; App., p. 4):

> "8. The Snyder invention, as embodied in the Maytag machine, consists of a tub, in the bottom of which is a power-driven impeller called a gyrator, consisting of a disc substantially less in diameter than the tub, having a cone-shaped center, and upon the disc are mounted four radially disposed blades. This impeller is oscillated at such speed as to set in motion violently opposed currents of water which establish a flow outward from the bottom center of the tub, upward at the sides to the surface of the water, and back to the center and down to the inner portion of the impeller blades. The fabrics being washed, if the mass is not too great, follow that course, turning over constantly. The water is hot and contains soap, and at the end of ten minutes, more or less, the fabrics so treated are cleansed. The success of the operation is not questioned."

(11 F. Supp. 743, 745, Finding 7, App., p. 3):

> "The teaching of the Snyder patent, stated in simple language, is that it departed from the understanding prevalent in 1920 or thereabouts that washing machine technique required for its suc-

> cess a method of rubbing, dragging, squeezing, twisting and manipulating the clothes within the tub so as to duplicate the process involved in the manual use of the scrub or wash board, when washing was accomplished entirely by hand, and substituting for that a process of contorting the fabrics mainly by water action, so that the deformation of the threads and consequent dislodgment and migration of foreign particles from the meshes and threads themselves would be accomplished without subjecting the fabrics to the heavy wear and tear previously encountered. The Snyder invention accomplished this new result. It washes clothes satisfactorily. It was a response to repeated efforts to meet known requirements, has been commercially successful and has largely supplanted the previous types of machines."

The Court of Appeals disregarded these findings, and despite the fact that the Snyder patent claims are predicated on a machine for washing clothes by vigorous water action, said (86 F. (2d) 627):

> "The evidence shows that the machine made under the patent and the machines of the appellant, as well, cannot wash by water action alone."

The undisputed evidence in the instant cases is that these machines do wash by water action alone (Ray Ryan, R. 178, 180, 195, 212, 222; Gladys Ryan, R. 227-8; Beushausen, R. 273; Bones, R. 160-1).

The Court of Appeals said (86 F. (2d) 627):

> "In the machine made under the patent the circular movement of the water and the clothes *does in fact bring the clothes and different portions of them rapidly in contact with the impeller blade which scrub, beat, and flex the clothes* to conform the threads and loosens the dirt from the interstices of the fabrics."

There is no evidence to support this statement and

the evidence here clearly establishes the contrary (Ray Ryan, R. 178, 180, 195, 212, 222; Gladys Ryan, R. 227-8; Beushausen, R. 273; Bones, R. 160-1).

(b) Claims 23, 26 and 29 in suit are each limited to a water impeller *mounted in the bottom of the tub.* Claim 23 (p. 8, line 5) is limited to "a rotary reciprocating impeller mounted in the tub adjacent its bottom." Claim 26 calls for "said tub and impeller being so constructed and arranged as to cooperate while the impeller is in operation for whipping the fluid and violently forcing it *outwardly, upwardly.*" This action can only be secured by an impeller mounted at the bottom of the tub to which the claim is thus clearly limited. Claim 29 calls for "a rotary reciprocatory impeller mounted adjacent the bottom of the tub," and states that "the impeller is rapidly reciprocated to cause the liquid to be positively forced *outwardly upwardly* and circumferentially along the interior of the tub in one general direction, and then outwardly, upwardly and circumferentially along the tub in the opposite general direction."

Each of these claims is also limited to features of construction, arrangement of parts and operation found by Judges Byers and Otis, but disregarded by the Court of Appeals, which clearly distinguish each of them from the prior art upon which the Court relied to defeat them.

Claim 23, for example, calls for the following combination of structure and operation:

(a) *a tub, "the interior surface of which is free from rubbing projections,"*

(b) *"a rotary reciprocatory impeller* mounted in the tub *adjacent its bottom,* having a base and a plurality of blades, *each of which is of substantial*

height and lateral area, and a central portion projecting upwardly from the base, the upper surface area of the base being *considerably less than the horizontal cross-sectional area* of the tub through its upwardly extending portion, *the margin of said base being spaced a substantial distance away from the upwardly extending portion of the tub,*"

(c) "said tub and impeller being *so constructed and positioned* relative to each other than when the impeller is *rapidly* reciprocated each blade and its adjacent portion of the impeller base will simultaneously drive the cleansing fluid in one and then an opposite outward upward, circulatory direction toward and around the clothes, and act in co-operation with the interior of the tub to cause *violently flowing opposed currents of liquid* to meet and flow inwardly and downwardly toward the central portion of the tub, and *substantially suspend* the materials in the fluid while being washed,"

(d) "a rotary reciprocating drive shaft extending upwardly through the bottom of the tub into the interior thereof for supporting the impeller for movement in a *fixed plane,*"

(e) "and power means for *rapidly* reciprocating the shaft and impeller for the purposes set forth."

In referring to claims 23 and 26 of the Snyder patent, the Court of Appeals said (86 F. (2d) 627 and 628):

"the apparatus claims call for washing clothes partly by water action and partly by rubbing the clothes against the moving agitator blades."

"Claims 23 and 26 provide for three mechanical elements. . . The elements are a tub, a substantially imperforate rotary impeller having blades

of substantial height and lateral area projecting into the tub and mounted to operate in a fixed plane and power means for rapidly reciprocating the impeller. *These elements in combination illustrate and describe the patented claims. . . . The impeller may be of any shape or it may or may not have a central tapered dome,* and the blades may be of any shape and need not be uniform or equally spaced."

"Any shape tub will do. *The interior surface may be corrugated or smooth.*"

An examination of the claims in suit will show that there is no foundation for the statement that these claims call for washing clothes partly by water action and partly by rubbing the clothes against the moving agitator blades. The rest of the statements above quoted fail to take into consideration and disregard the limitations of each of claims 23, 26 and 29 here in suit, which are so essential to the successful operation of the Snyder invention and so clearly distinguish it from the art relied upon by the Court of Appeals to defeat the claims, as will be readily seen from a reading of any of them.

(c) Judge Byers found with respect to the Jardine patent (App., p. 46) (11 F. Supp. 743, 752):

"One can read the Jardine patent closely and often and yet not find any teaching whatever of a device to perform the operation of washing according to what Snyder says he invented. Jardine's instruction was of a means to prevent the mangling of fabrics beneath the disc. The presence of the ribs in the tub, and the necessary squeezing of fabrics against them by the blades of the agitator, are too clearly indicated by this patentee to admit of misunderstanding."

The Court of Appeals, disregarding this finding, said (86 F. (2d) 629):

> "The British patent to Jardine of 1891 also comprised these elements"

of the claims 23 and 26. In making this statement it also completely disregarded the plain limitations of each of the claims. Its statement that the Jardine patent is—

> "characterized by the absence of rubboard surfaces within the tub and by a vigorous agitation of water by the agitator. The only rubbing that occurs is between the clothes and the agitator,"

disregards the finding of Judge Byers and reads into the Jardine patent a disclosure neither present nor intimated by her. Furthermore, this statement disregards the undisputed evidence to the contrary (R. 319, 320).

The Jardine patent clearly shows a series of large projections on the interior of the tub of its dolly type machine, which plainly co-act with the dolly in the rubbing and scrubbing of the clothes between them while the dolly is operated. The use of the term "dolly" by Jardine seventeen times in her patent indicates the character of its action. The understanding of the term "dolly" in connection with washing machines at the time this patent was taken out and subsequently clearly indicates its action. Webster's New International Dictionary defines it as—

> "A wooden instrument used to beat or stir the clothes in the process of washing."

The statement made by the Court of Appeals (86 F. (2d) 629):

> "The vertical ribs or projections on the inner surface of the tub [Jardine] have no functions and

> do not affect the washing operation when the agitator is reciprocated instead of being revolved."

is without any support whatever in the present record, and is contrary to the undisputed testimony on the subject and directly contrary to the finding of Judge Byers above quoted (11 F. Supp. 743, 752). The holding that this Jardine patent discloses the operation described and claimed by Snyder is flatly disputed even by defendant's expert in the Brooklyn Edison case, who said of that structure:

> "The clothes are rubbed, pounded, dragged and squeezed in the operation of that machine, and that that was definitely the fact."

The statement of the Court of Appeals (86 F. (2d) 629) that:

> "The requirements of this claim [Snyder's] are fulfilled in all respects . . . by the machines . . . made pursuant to the patent to Jardine"

is erroneous not only as to the fulfillment of the Snyder claims, but there is not the slightest evidence to show that any machines were ever made pursuant to the Jardine patent.

The Patent Office considered the Jardine patent and also found that it did not embody the Snyder invention (R. 1236) and allowed the claims in suit over it.

It was only by a complete disregard of the teachings of the Snyder patent, and the limitations of each of the claims asserted, the findings of the Patent Office and of the trial court with respect thereto and to the operation of the machine made under the Snyder patent, and by reading into the Jardine British patent things neither taught nor disclosed in it, and reading out of it certain elements necessary to its operation, that the Court

of Appeals reaches the conclusion that this Jardine patent invalidates the Snyder claims.

(d) Referring to the Davis patent the Court of Appeals said (86 F. (2d) 628):

> "Tests made demonstrated the movements of the wash water on the fabrics to be of the same character as that made by the appellee's machine with the inverted impeller. Clothes were washed by the rubbing or pressure of the vanes coupled with the circulation of the water in the tub directed and forced by these vanes. Thus, in the washing operation, the movement of the water in the Davis patented machines does in turn impart a similar movement to the fabric."

The evidence disclosed no such tests. After Doughty and Davis had devoted much time and effort to eradicate the defects of the Davis machine, Mr. Doughty himself wrote the following to his company's patent attorney on March 23, 1921:

> "Another advantage results from *the avoidance of an action which occurs in the top agitator machine* [Davis] *which causes the agitator to sink in the water and restrict the free movement of the clothes.* The reason for this objectionable action is this: the vanes on the agitator then in motion cause the water to flow from the center toward the side of the tub. Consequently, the center is lowered and the agitator, which is only held in position by floating upon the water, or by the supporting effect of the clothes, *is drawn down with the result of compressing the clothes restraining their free movement* and increasing the power required to operate the washer." (R. 1317.)

It is a striking circumstance that the very same men who were trying to operate under the Davis patent, one of them Davis himself, tried to surmount the

serious defects inherent in the downwardly projecting "freely movable vertically" rubboard by his work in producing the Doughty & Davis machine which was not started until months *after* Snyder had made his invention and reduced it to practice. The evidence further makes it clear:

(a) That the rubboard of the Davis machine is not mounted for operation in a *fixed* plane, as called for by the Snyder claims, but is *slidably mounted* in the cover and *"freely movable vertically"* (last line Davis patent claim, App., p. 53) (Behan, R. 377, 383; Bones, R. 156-7; Yeomans, R. 303-12).

(b) That (R. 309):

"The clothes are not carried in suspension in the Davis machine . . . . and they are entirely carried down to the bottom and pressed down by the rubboard, with very obvious scrubbing against the side of the tub and bottom of the tub."

(c) That the mass of clothes compressed between the rubboard and the bottom of the tub is scrubbed by and between these elements (Yeomans, R. 305-6) instead of being washed by vigorous water action. (The evidence depicts the radical differences between the construction and operation of the Davis and Snyder machines, R. 308-12.)

That the Davis machine is of the rubboard type and operates in substantially the same way as all machines of that type is clearly shown by the present record (R. 173, 200, 274, 303-12, 318-9). Evidence concerning these rubboard type machines demonstrates their impracticability in use and that their plan of operation is radically different from that of Snyder. (Ray Ryan, R. 178, 190, 195, 200; Beushausen, R. 273-4; Yeomans,

R. 308-12, 318-9; Gladys Ryan, R. 224-8; Esther Ryan, R. 245-7; Winger, R. 283-5; Weeks, R. 238; Grober, R. 257, 160.)

The statement of the Court of Appeals (86 F. (2d) 628):

> "Mere speeding up or obtaining a greater rapidity than that of the Davis machine did not constitute inventive thought over Davis"

is beside the point as shown by the present record. The mere speeding up of the Davis machine cannot change its mode of operation and would be detrimental in use, as is shown by the undisputed testimony here. (R. 479, Osgood said the Davis machine was at first operated at a higher speed and had to be slowed down.)

The holding of invalidity of the Snyder claims in view of this Davis patent completely disregards the testimony of respondents' own witnesses, the finding of fact of Judge Byers with respect thereto. It is likewise in conflict with the findings of Judge Otis made after the decision of the Court of Appeals in the Brooklyn Edison case, but before its decision in the instant cases. He found (App., p. 29):

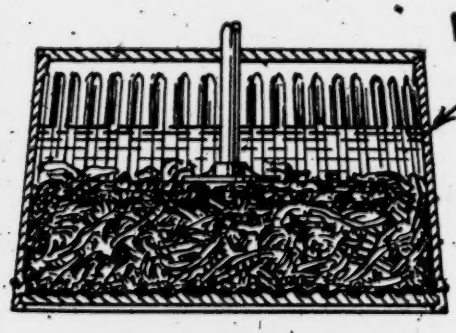
> "The demonstrations of these machines by plaintiff, considered in connection with defendant's own witnesses and the statements made by Mr. Doughty in his letter to Mr. Clark of 1921, shows that in the operation of the machines of the Davis patent the clothes are compressed and rubbed as a mass between the slidably mounted rubboard and the bottom of the tub, and that the clothes are washed in it by the rubbing action of the rubboard and the rubbing of the mass against the corrugated interior of the tub, and in a manner radically different from that described, disclosed and claimed in the Snyder patent."

The Davis patent was considered by the Patent Office

and held not to disclose or describe the Snyder construction and operation, or contain the combination of elements here claimed (R. 1113). It taught the 1900 Company's engineers nothing concerning the gyrator type machine embodying the Snyder invention, for with full knowledge of this Davis device they spent a long time experimenting with the Maytag machine in its plant (R. 370-1) before going into the production of its gyrator type machine now being manufactured and sold by the 1900 Company under license of the Snyder patent (R. 386):

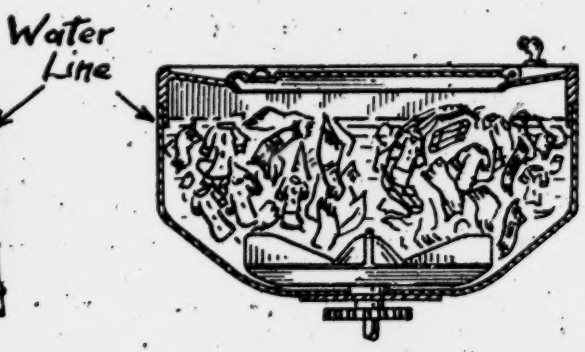
The illustrations below show the diametrically opposed operation of the Davis and Snyder machines.

Davis Machine.



Notice the rubboard **slidably** mounted in the cover which compresses the clothes into a mass and **washes by rubbing and squeezing this mass between the rubboard and the bottom of the tub.**

Snyder Machine.



Notice the water impeller mounted in the bottom of the tub for operation in a **fixed** plane whereby **the clothes are washed as individual pieces by the violent water action.**

When one understands the radical differences between the construction and operation of the dolly (Jardine) type and the rubboard (Davis) type machines, it must be found, as two trial courts found, that these

mechanisms and their operation are entirely different from that of Snyder. Instead of invalidating the Snyder invention covered by the claims in suit, they emphasize the Snyder invention. Washing machine manufacturers generally were familiar with these old type machines and the manner of using them, but they suggested nothing to the searching manufacturers comparable to the invention of Snyder which has largely supplanted all previous types in homes in this country.

It was only by disregarding the construction and operation of the machines made under the Davis patent and disclosed in it, and disregarding the findings of the Patent Office and the trial court with respect thereto that the Court reached the conclusion that this patent embodies the Snyder invention.

(e) The Court of Appeals in referring to the Doughty & Davis patent said (86 F. (2d) 628):

> "Form 4 machine, made as described in Doughty-Davis patent, No. 1,496,305, prior to Snyder, . . . provides the same circulation movement of the water and the fabrics. It too anticipated the patent."

The evidence in the Brooklyn Edison case and here clearly establishes that Snyder made his invention prior to the earliest date claimed for Doughty & Davis (Miller, R. 563-6; Stephen, R. 594-5; Bradt, R. 621-3; Mooar, R. 602-3; Elliott, R. 588-90; Herbst, R. 647-51; Thornton, R. 635-8; Mason, R. 640-1). Judge Byers found from this testimony taken in open court before him that (App., p. 10; 11 F. Supp. 757)—

> "Snyder disclosed his invention to Frederick F. Mason on January 21, 1921, and that Snyder's reduction to practice preceded that date by several months."

The testimony in the present case is the same as that on which Judge Byers made this finding. On substantially the same testimony given in open court, Judge Otis in the General Electric Supply case found that Snyder reduced to practice his invention months prior to the earliest date claimed for the Doughty & Davis machine, as follows (App., p. 41):

> "Snyder's reduction to practice and use of his invention in May of 1920, was more than eight months before the earliest date claimed by defendant [the same as claimed by respondents here] for the disclosure or use of the 1900 Company's Form 4 machine made under the Doughty & Davis patent. The Doughty & Davis machines can not be used as an anticipation of Snyder."

The rule announced by this Court in *Davis* v. *Schwartz,* 155 U. S. 631, 636; *Adamson* v. *Gilliland,* 242 U. S. 350, 353, that—

> "so far as the finding of the master or judge who saw the witnesses 'depends upon conflicting testimony, or upon the credibility of witnesses, or so far as there is any testimony consistent with the finding, it must be treated as unassailable' "

is applicable to the testimony concerning the Snyder invention as Judge Byers found (as did also Judge Otis) that this testimony established Snyder's date of invention as prior to any work done by Doughty & Davis, after seeing and hearing the witnesses who appeared before him (App., p. 10, 11 F. Supp. 757). The Court of Appeals clearly departed from this rule when it failed to follow the finding of Judge Byers in the Brooklyn Edison case.

Judge Byers, and Judge Otis after witnessing demonstrations of the Snyder and the Doughty & Davis machines and hearing testimony concerning them independently found that (App., p. 39):

> "The Snyder washing machine with its impeller having a base of substantially less diameter than the upper portion of its tub and having blades of substantial height and lateral area and operating this at high speed to impel the necessary amount of washing fluid so vigorously and in such a manner as to substantially suspend the clothes by the water action while washing them, is clearly distinguished from the structure and disclosed operation of the Doughty & Davis machine."

There is thus a direct conflict between the decision of the Court of Appeals for the Second Circuit and the findings of fact of Judge Byers and Judge Otis, both with respect to the fact that Snyder made his invention before any date claimed for Doughty & Davis, and with respect to the radical differences in construction and operation of their machine and that of Snyder.

V.

In reaching its conclusions as to invention the Court of Appeals disregarded the decisions of this Court and the findings of Judge Byers in the Brooklyn Edison case, later fully concurred in by Judge Otis, which demonstrated invention over the prior art relied upon by the Court of Appeals to defeat that patent. Both trial courts followed the pronouncements of this Court in *Diamond Rubber Co.* v. *Consolidated,* 220 U. S. 428, 434, where it said in speaking of the rubber tire patent there involved:

> "It attained an end not attained by anything in the prior art, and has been accepted as the termination of the struggle for a completely successful tire. It possesses such amount of change from the prior art as to have received the approval of the Patent Office, and is entitled to the presumption of invention which attaches to a patent. Its

simplicity should not blind us as to its character. Many things, and the patent law abounds in illustrations, seem obvious after they have been done, and 'in the light of the accomplished result,' it is often a matter of wonder how they so long 'eluded the search of the discoverer and set at defiance the speculations of inventive genius.' *Pearl* v. *Ocean Mills,* 11 Off. Gaz. 2. . . . . the law has other tests of the invention than subtle conjectures of what might have been seen and yet was not. It regards a change as evidence of novelty, the acceptance and utility of change as a further evidence, even as demonstration."

Judge Byers found (App., p. 5):

"11. The Maytag machine, embodying the Snyder invention, was first put on the market in 1922 and substantial sales were made in that year; subsequent commercial success has rewarded the plaintiff, so that down to the trial some 2,000,000 machines have been sold, of which 172,000 had the low center post illustrated in the patent, and the balance the high center post later adopted. That element is conceded not to affect the issues here involved.

"12. Comparatively little advertising of the Maytag machine embodying the Snyder invention was done down to 1925, but its sales were naturally accompanied by increasing publicity and large sums came to be expended for advertising in later years. This was after competitors' machines of the same type appeared upon the market.

"13. At the outset the dealers were skeptical concerning the claims of the plaintiff that its new washing machines so operated as to wash clothes by water action. Competitors who were then selling the various types of previous machines above referred to fostered that skepticism. It is not contradicted that plaintiff's machine was referred to in trade circles as an ensilage cutter, and was

otherwise derided both by dealers and salesmen from competing manufacturers.

"14. Contemporaneously with the early introduction of the Maytag machines the A B C Company and the Easy Company, manufacturers of the defendant's A B C and Easy machines, respectively, acquired Maytag machines, embodying the Snyder invention, for the information of their experimental staffs.

"15. In about 1925 and 1926 competitors' machines appeared upon the market of the same type as Maytag, that is, they had a bottom positioned impeller, power driven, and of the same general appearance, and the same claims were made for them in pamphlets issued by the manufacturers as were made by the Maytag Company, namely,—that in these machines, washing was done by water action with resulting saving in time and wear and tear upon the fabrics. That condition has continued to prevail down to the time when this suit was started.

"The assertions in all of the advertising matter, and there is a substantial bulk in evidence, are flamboyant and unrestricted to the effect that the A B C, Easy and Thor washing machines do their work by water action, etc. The defendant itself distributed some of these pamphlets.

"16. The issuance of the Snyder patent was delayed for over six years by a vigorously contested interference proceeding resulting in a decision in Snyder's favor by the Court of Customs and Patent Appeals (*Unruh* v. *Snyder,* 49 Fed. (2d) 1038) and another such proceeding was attempted by Altorfer without success. The consideration given the Snyder invention and application by the various tribunals of the Patent Office and the Court during these proceedings and the unusual strain and stress of this searching process strengthens the usual presumption arising out of the issue of a patent."

Similar findings were later made by Judge Otis (Nos. 6-13, inc., App., p. 24) including:

> "12. The General Electric Company sold the plaintiff company motors for use on its Gyrator machines made under the Snyder patent during the entire period from 1922 until the end of 1930 (R. 193-4). Its engineers and other representatives became thoroughly familiar with these Maytag machines through visits to The Maytag Company plant and its experimental department during this period. This was until shortly before it first appropriated the Snyder invention and placed it upon the market in the form of the machines here charged to infringe. Since that time the General Electric Company has claimed for its washing machine sold by defendant the same inherent advantages and method of operation depicted in the Snyder patent.
>
> "13. The machine of the Snyder invention has had an unusual commercial record, plaintiff having sold approximately three million machines utilizing it (R. 187)."

The Court of Appeals failed to follow these findings and the **decision of this Court on which they** were based.

We respectfully submit that under the circumstances and for the reasons stated in the petition and elaborated in the argument that the petition should be granted in the interests of petitioner, the public, and the prompt and proper administration of justice.

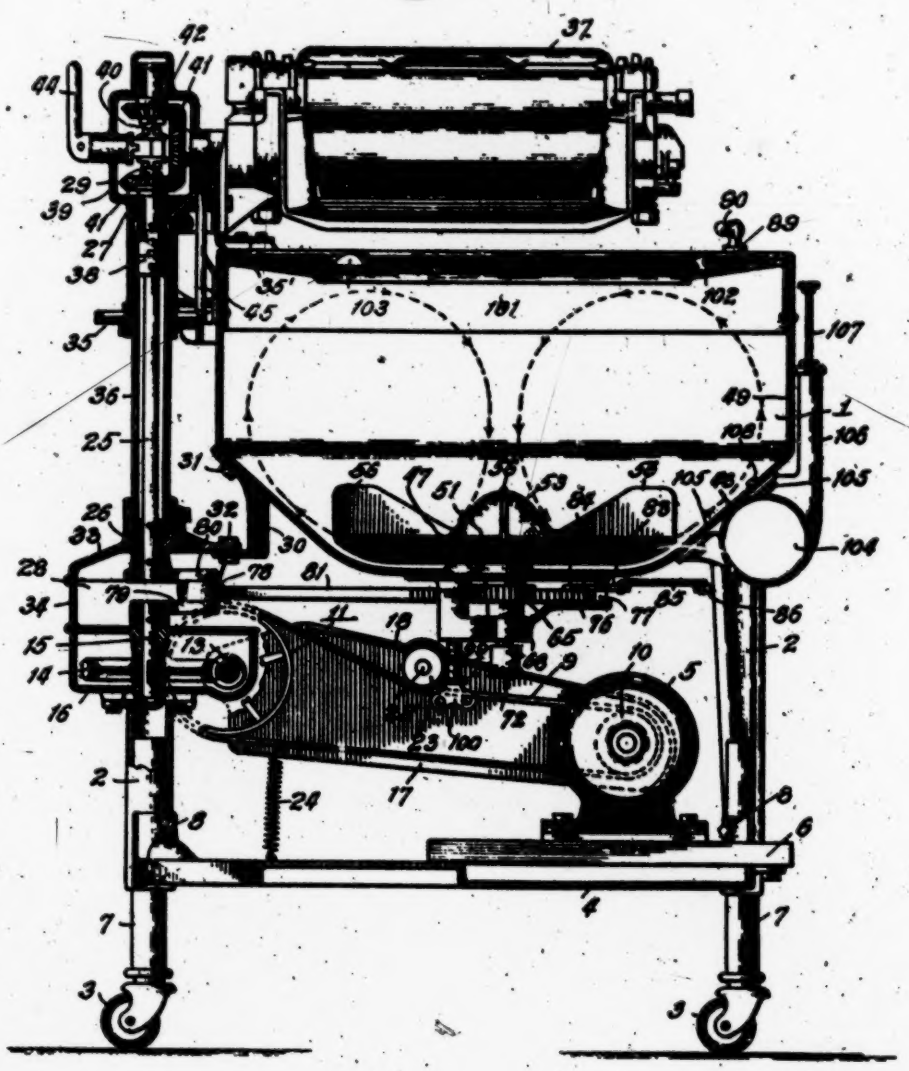
THOMAS G. HAIGHT,
WALLACE R. LANE,
OSCAR W. JEFFERY,
BENTON BAKER,
Counsel for Petitioner.

July 12, 1932. H. F. SNYDER 1,866,779

WASHING MACHINE

Filed June 14, 1922 3 Sheets-Sheet 1

Fig. 1.



Inventor:
Howard F. Snyder,
by Wallace R. Lane.
Attys.

July 12, 1932. H. F. SNYDER 1,866,779

WASHING MACHINE

Filed June 14, 1922 3 Sheets-Sheet 2

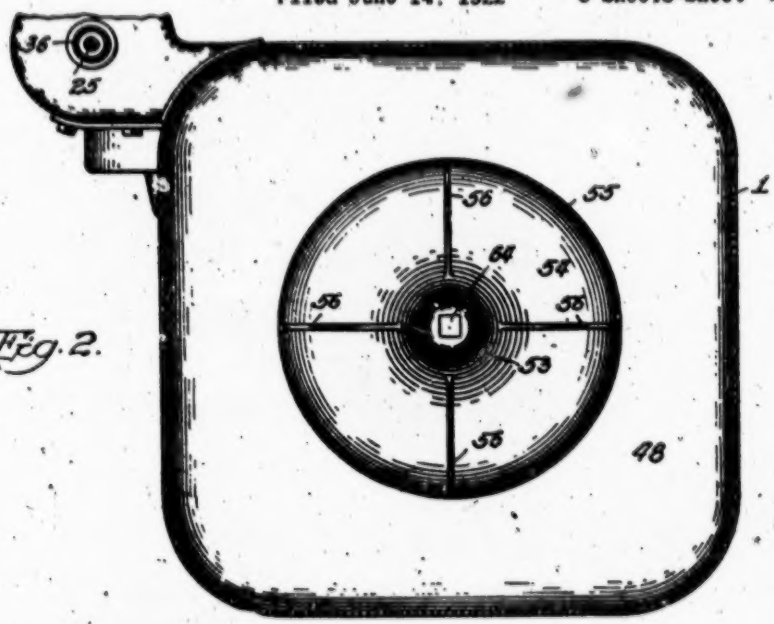


Fig. 2.

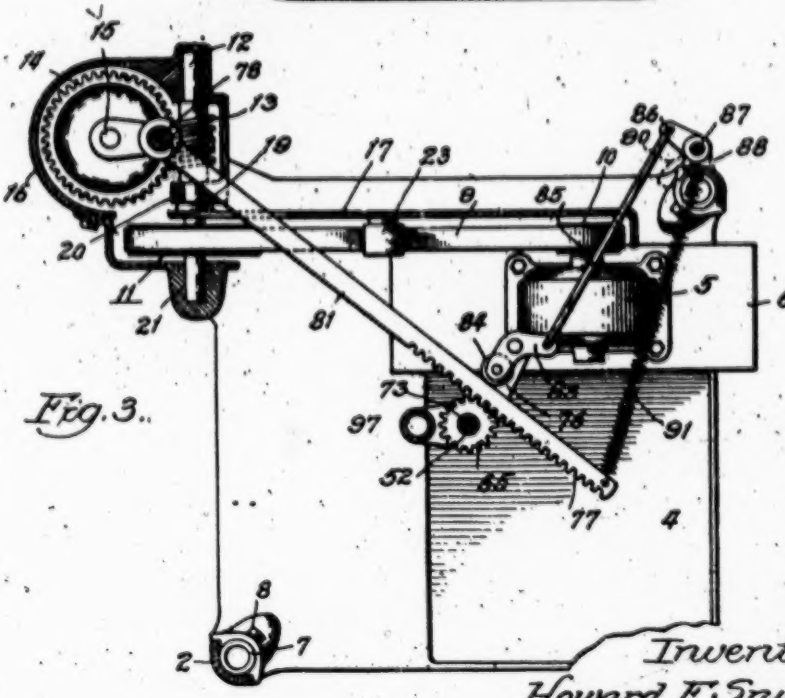


Fig. 3.

Inventor
Howard F. Snyder
by Wallace R. Lane

July 12, 1932. H. F. SNYDER 1,866,779

WASHING MACHINE

Filed June 14, 1922 3 Sheets-Sheet 3

Fig. 4.

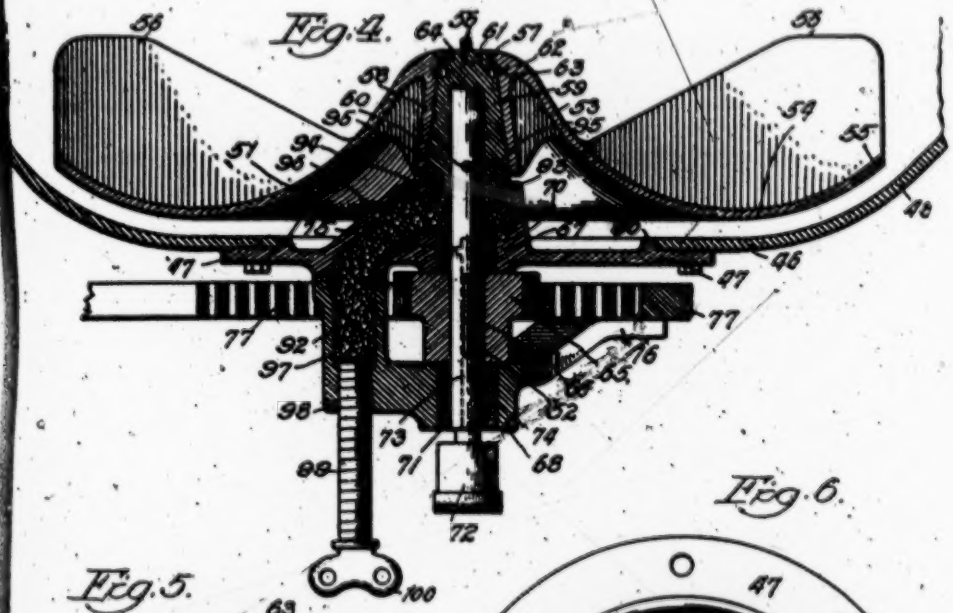


Fig. 6.

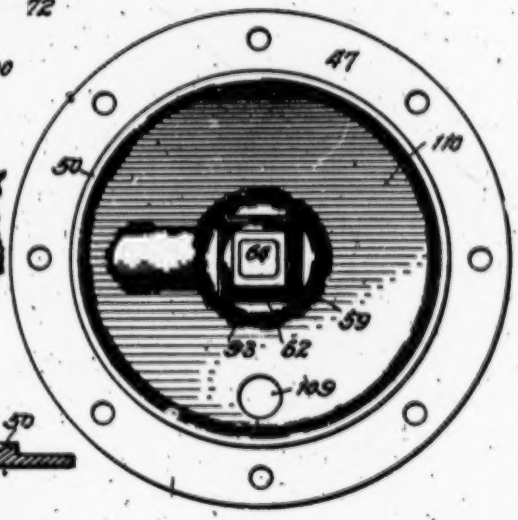
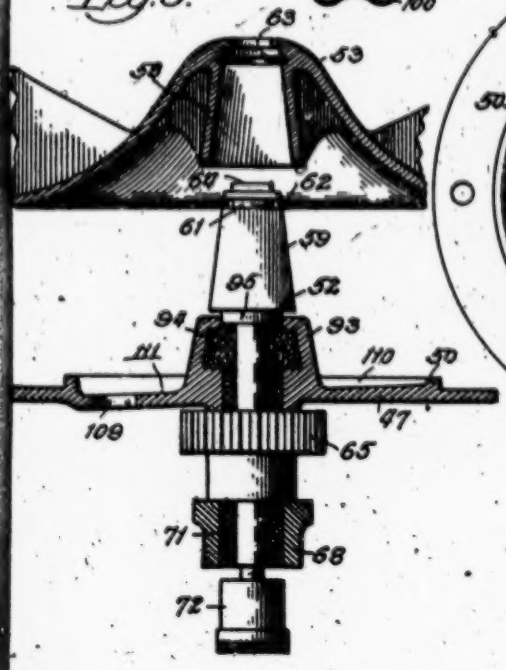


Fig. 5.



Inventor:
Howard F. Snyder.
by Wallace R. Lane.
Atty.

Patented July 12, 1932 1,866,779

UNITED STATES PATENT OFFICE

HOWARD F. SNYDER, OF NEWTON, IOWA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE MAYTAG COMPANY, OF NEWTON, IOWA, A CORPORATION OF DELAWARE

WASHING MACHINE

Application filed June 14, 1922. Serial No. 568,158.

The present invention relates to a power driven washing machine and more particularly to the construction of the gyrator or impeller and tub thereof and the gyrator or impeller operating mechanism for such machine.

Among the objects of the invention is to provide a novel construction designed to wash and thoroughly cleanse clothes, fabrics and various similar materials of all kinds. My invention is equally efficient in washing fabrics, and other similar materials of a very delicate nature, that may have become frail and weak owing to aging, wear and otherwise. Among such delicate materials are included fine laces, nettings, veils, fine silks, lace curtains and various other articles. Very often valuable articles, relics, heirlooms and other objects of great value are composed partly or wholly of fine and frail textures, such that they cannot be easily washed when soiled, since their nature would not permit subjecting them to the rigors of the ordinary washing machine operation, or even washing by hand. By my invention, the washing and cleansing of such objects is not only made possible, but practicable, such that most delicate and frail objects can be handled mechanically during the washing operation without marring their character and beauty. By reducing friction on the articles to be washed the life of the article is preserved.

These and the other objects of the invention are attained by so constructing and associating the tub and the gyrator of the washing machine, and so operating the gyrator that the weight of the articles does not interfere with the gyrator, or its action, or with the tub and its co-action with the gyrator. In my invention the gyrator and tub, irrespective of the upper or lower end position of the gyrator therein, so coact that the goods to be cleansed are not only given a definite washing and cleansing movement, but are also maintained, during such movement, in a suspended condition in the liquid, so that the rapid and energetic alternating rotary movements of the gyrator do not interfere with the goods or cause them any injury or damage, while at the same time the goods and the wash water, (or the rinse water, when rinsing), are turbulently swirled or whirled about with a surging and seething movement within the tub. Even in the form of the invention illustrated, wherein the liquid impelling blades are disposed at the bottom of the tub, the action of the agitator on the liquid is to constantly press the clothes upwardly in a swirling formation so that they are maintained in substantial suspension in the liquid above the blades. To this end the tub preferably has a smooth interior not interrupted by flanges or other projections, and preferably has an inclined bottom portion so associated with the gyrator and the remainder of the tub as to cooperate therewith in aid of such action.

One of the principal objects of this invention resides in providing this improved method of and apparatus for cleansing fabrics without bringing them into substantial rubbing contact with the walls of the tub or the liquid agitating mechanism.

As another object of the invention, the gyrator is provided with flanges which, during the alternations thereof, act to successively impart movement to the contents of the tub, such that the resultant direction of movement of the contents in the embodiment illustrated in the drawings is normally radially outward from the central portion of the tub, then upwardly, then inwardly and then downwardly toward the center of the gyrator, and yet at the same time there is a generally rotary progression or movement about the inside of the tub, first in one direction and then in an opposite direction, such movement being in the nature of a gyratory action or movement and appearing to be that of a helix around a ring. In this way the goods or objects undergoing the washing operation are driven about in the tub in devious paths, while at the same time the wash water or cleansing fluid is being vigorously agitated and rigorously moved about the tub in devious paths to sustain the washable materials, whereby they will not be injuriously affected by the gyrator operating or actuating mechanism. This mechanism may be

readily thrown into and out of operative connection with the gyrator at will.

Still further objects of this invention reside in providing a novel construction of agitator blade; and in further providing resilient means, tending to normally render the gyrator inoperative but yieldable to render the same operative when manually actuated; to provide a combined means for guarding against the accidental contact or interference of the operator with the driving mechanism of the washing machine and maintaining the driving mechanism in effective driving condition, as by constantly maintaining a driving belt taut; and to provide other features having the objects, advantages and capabilities hereafter more fully appearing.

Due to the construction and arrangement of the tub, gyrator and driving mechanism, this machine provides a decidedly new method of cleaning fabrics, in that while the clothes are washed thoroughly, this is done by the action of the water itself on the materials as distinguished from their being rubbed or drawn through the water by a dolly or other mechanism, or tumbled against the sides of the tub or rubbed against projections on the interior of the tub. In my machine the clothes are driven and swirled about in and by the water in the interior of the smooth tub. The materials never come in any substantial contact with either the tub, or the gyrator which initially causes the agitation, seething and surging of the water on the interior of the tub. The peculiar movement of the water caused by the action of my gyrator in operation largely prevents rubbing the clothes against the container or gyrator and eliminates the deterioration of the materials being washed by it. These and other advantages which I find it difficult to explain because of the unusual movement of the water are possessed by my machine.

By the term gyrator is meant an alternating rotary member operable to effect movements of fluids and materials from the central portion of the member toward its outer edge or borders.

In the drawings illustrating a preferred form of the invention:—

Fig. 1 is a vertical sectional view taken through the washing machine.

Fig. 2 is a horizontal sectional view taken through the tub, showing the gyrator in top plan view.

Fig. 3 is a sectional view showing portions of the operating mechanism.

Fig. 4 is a detail vertical sectional view on an enlarged scale of the bottom of the tub, the gyrator, part of the gyrator operating mechanism and the packing means for the bearing of the gyrator shaft.

Fig. 5 is a detailed sectional view of the driving connection between the gyrator and the driving mechanism therefor.

Fig. 6 is a top plan view of the removable plate at the bottom of the tub, with the gyrator removed.

Referring more particularly to the drawings, the washing machine comprises a tub 1 supported upon and fastened to legs 2 having roller casters 3. To the legs 2 is secured a platform 4 upon which is supported a motor 5 bolted to an insulating base piece 6 in turn bolted to the platform 4. The legs 2 have telescopic sections 7 of tubular form slidable in clamp portions, forming part of the legs 2, for the purpose of adjusting the height of the washing machine, the sections 7 being held in adjusted position by means of set screws 8. The motor 5 is connected to the driving mechanism by means of a belt 9 running over a pulley 10 fixed to the motor shaft and a driven pulley 11 fastened to a cross shaft 12 carrying a worm screw 13 in mesh with a worm gear 14 keyed to a vertical shaft 15. The gear mechanism 13–14 is suitably housed in a housing 16 bolted to and forming part of one of the supporting legs of the washing machine.

Between the motor 5 and the gear mechanism 13–14 extends an aluminum belt guard 17 which encases the belt 9 and pulleys 10 and 11, the guard having a flange 18 extending over the upper lap of the belt and the pulley 10. By this means accidental contact with the driving belt 9 and pulleys 10 and 11 is prevented. The guard has a hub portion 19 by which it is pivotally supported upon a part of the shaft 12 between the bearings 20 and 21 formed in the housing 16. To an intermediate part of the guard is fastened a pivot stud 22 upon which is idly and rotatably carried a belt tightener roller 23. It will be noted that this guard is supported only by the shaft 12 and the roller 23 bearing upon the upper lap of the belt 9, so that the guard is capable of an upward and downward swinging movement about the axis of the shaft 12 as the belt becomes taut or slack. The amount of the tautness given the belt, as the roller 23 presses against it, is derived from the combined weight of the guard, with the parts carried by it, and a tension spring 24 connected between and to the guard 17 and the platform 4, the tension of the spring adding to the weight of the guard to maintain the roller 23 in tightening contact with the belt.

In vertical alinement with the shaft 15 is a second shaft 25, rotatably supported in suitable bearings 26 and 27 respectively, forming parts of the crank and gear housings 28 and 29. Said housing 28 is rigidly connected to the tub by means of a bracket 30 and bolts 31 and 32 and includes the top and intermediate members 33 and 34 of the housing 16. The housing 29 is rotatably sup-

ported upon a ledge 35 rigidly bolted to the side of the tub 1 and also made fast to the top of the tub through a bolted bracket 35'. A tube 36 is connected between the members 33 and 29 and houses the shaft 25. The shaft 25 drives a wringer 37 through the medium of clutches 38, 39 and 40, and gears 41, 42 and 43, which may be manually and selectively controlled through the handle 44 for causing the operating of the wringer in any direction desired and in whatever position the wringer may be relative to the tub. The wringer is capable of swinging into different positions with respect to the tub about the axis of the shaft 25, and to be held in any of its positions by a spring pressed locking pin 45 cooperative with recesses in the ledge 35. The details of the mechanism for operating the wringer do not form part of this invention, and therefore, further description thereof is deemed unnecessary.

The tub 1 is preferably substantially square in horizontal cross-section and is shallow with respect to its horizontal dimensions. It has a central bottom portion 46, an inclined portion 48 and vertical side walls 49. It may, however, be of other form than square and the inclined portion 48 may be omitted.

For the purposes of exemplifying my invention, the gyrator or impeller is disclosed and described as mounted on the tub for support. Herein it is shown as projecting upwardly through the bottom of the tub, but it must be evident that all desirable arrangements are within the contemplation of this invention, such, for instance, as the mounting of the impeller so as to depend into the liquid from the upper portion of the tub, thereby bringing about the consequent reversal in the flow of the fluid through the tub. Thus, as modified, the flow will be radially outwardly and thence downwardly, and then inwardly and upwardly toward the center of the gyrator. In the present disclosure the bottom 46 of the tub 1 has a circular opening which is normally closed by a plate 47 bolted to the bottom 46. The radially extending portion 48 at the bottom 46 inclines upwardly toward the vertical side of walls 49 of the tub for a purpose hereafter described. The plate 47 supports the gyrator 51, the packing means for the gyrator shaft 52 and part of the operating mechanism for the gyrator.

The gyrator is metal, or other suitable material, and is of generally circular form when viewed in plan. It comprises an annular, trough-like or dish-shaped portion 54, the central or inner portion of which merges in a continuous concave curve into a central upstanding stem portion 53 which tapers upwardly and terminates in an upper rounded end. The outer peripheral edge of the trough-like portion 54 extends outwardly and upwardly in a concave curve 55 which is continuous with the dished curve of the portion 54. The gyrator is provided with liquid impelling means, one form and arrangement of which is illustrated in the drawings.

Extending in spaced position radially from the central stem or dome 53 are a plurality of flat, vertically projecting blades, wings or flanges 56 of the shape shown in Fig. 4 of the drawings. The projecting surfaces of these blades taper or incline inwardly in a general direction from their outer edges to the trough-like portion of the gyrator. They extend from the outer edge of the upwardly inclined portion 55, across the portion 54, thereof, and thence upwardly vertically along the sides of the central upstanding stem 53 to a point approximately half way up the sides thereof. At point the blades merge into the upper rounded end of the stem. The remaining or upper part of the stem is free of blades and forms a smooth, continuously flowing curve at the apex 57.

These blades 56 are of substantial height at their outer portions, so as to project well into the cleaning fluid. The blades incline or curve downwardly and inwardly toward the central axis of the agitator, that is, to the sides of the stem where they merge into the stem. As shown in Fig. 4, the blades extend across the dish-shaped member at the lower ends in lobe-shaped form and the upper surfaces of the wings or blades extend considerably above the dish-shaped member to provide sufficient blade surface to impart a considerable force or throw to the water in the direction outwardly and somewhat parallel to the axis of rotation of the gyrator, as hereinbefore described. It is to be noted that the outer inclined portion 55 of the dish-shaped member assists in this movement and that this directional flow is augmented by the inclined walls 48 of the surrounding trough or tub. The force imparted to the water is sufficient to cause the water to flow upwardly toward the top of the tub as shown in dotted lines, Fig. 1. The downward flow at the upper central portion of the tub prevents the overflow of suds. In the embodiment shown there are four of these blades, but any other number may be used as desired. Within the central stem portion 53 and depending from the apex 57 thereof is a hollow pyramidal socket 58, preferably square in horizontal section. It is adapted to fit upon a square pyramidal block or step 59 socketed to fit upon the upper end of the shaft 52 and secured to said shaft, to positively rotate therewith, by a cross pin 60 extending transversely through the shaft. At the upper end portion of the step 59 is formed an annular groove 61 in which reposes a spring lock ring 62 adapted, when the gyrator is forceably moved downwardly upon the step 59, to expand into an annular groove 63 formed in the apex portion 57 of

the gyrator. The uppermost end 64 of the step is squared to fit into a like aperture formed into the apex 57. The lower end of the socket may be provided with notches into which the ends of the cross pin 60 may extend, if desired. The various gyrator portions, namely, the apex, trough, peripheral, blade and pyramidal portions all are preferably integral. While this embodiment illustrates the invention, it is to be understood that the gyrator may be located at the top of the tub and in depending position from the top or cover thereof.

The shaft 52 is fixed to a pinion 65 by means of a key 66, and has bearings 67 and 68 respectively formed in the plate 47 and in a bracket 69 bolted to the underside of the plate 47. These bearings have bushings 70 and 71, preferably of brass or bronze. The pinion 65 is in thrust bearing with the ends of the bearings 67 and 68, and clamping bolts hold the bracket 69 in place such that the pinion 65 has no loose play, yet it is permitted to freely rotate or oscillate. The lower end of the shaft 52 has a grease cup 72 operative to supply a lubricant through bores 73, 74 and 75 to the bearing surface between the shaft 52 and bushings 70 and 71. The bracket has an arm 76 upon which rests and freely slides reciprocating rack 77 adapted to mesh with the drive pinion 65, the other end or crank arm portion 81 of the rack being pivotally connected to a crank pin 78 fixed to crank arms 79 and 80 fastened to the ends of the shafts 15 and 25.

The rack 77 may be thrown into or out of operative engagement or mesh with the pinion 65 at will. This is accomplished by the mechanism shown in Fig. 3. Upon the end of the arm 76 is pivotally supported a bell crank lever 83 carrying at one of its ends a roller 84 bearing against the rear face of the rack 77 and being apertured at its other end to receive a bent end of a link 85 running to a crank arm 86 having its free end also apertured to receive the other bent end of the link, the link being thus pivotally connected to said lever 83 and arm 86. The arm is fast to a vertical shaft 87 rotatably supported in bearings 88 and 89 respectively rigidly secured to a leg 2 and the side of the tub 1 (see Figs. 3 and 1). To the upper end of the shaft is fastened a handle 90 by which the lever 83, through the media of link 85, arm 86 and shaft 87 may be forced against the rack to cause the latter to engage with the pinion 65. A spring 91 is connected to the end of the rack 77 and a fixed part of the washer, as a leg 2 thereof, for the purpose of automatically disengaging the rack from the pinion and to hold the rack away from the pinion when the handle 90 is shifted to throw the lever 83 out of operation and thus stop the oscillation or rotation of the gyrator. The spring constantly tends to hold the rack away from the pinion and against the roller 84, the rack being thrown into mesh with the pinion only when the lever 83 and roller 84 are moved to positively shift the rack into enmeshment. The rotation of the crank 79–80 will cause a reciprocation of the rack over the arm 76 whether or not the rack be in engagement with the pinion. When the rack is moved into mesh with the pinion, the later is caused to alternately rotate and through the medium of shaft 52 impart such movement to the gyrator in the tub.

For the purpose of packing the gyrator shaft 52 the plate 47 and the bracket 69 are provided with communicating chambers adapted to hold a packing material 92, preferably composed of chopped or shredded and comminuted asbestos, graphite and oil. The packing space comprises an annular chamber 93 surrounding the shaft 52 between the bearing 67 and bushing 70, and a washer or packing 94, preferably of leather, in the opening at the top of the chamber 93 and located between the bottom end 95 of the step 59 and the packing material in the chamber 93. The chamber 93 extends through a passage 96 to a plunger chamber 97. The lower portion 98 of the latter has a screw threaded aperture in which operates a screw plunger 99 having at its outer end a winged finger piece 100 which may be manually rotated to feed the plunger into the chamber 97 against the packing 92. The packing 92 is somewhat plastic and is in a sort of fluidal state so that the stress applied to it by the forceful entry of the screw plunger into the chamber 97 will cause the packing 92 to flow through the passage 96 to the chamber 93 and completely fill the space of the latter. In this way compensation for any loss of packing owing to wear, leakage and otherwise is readily made. Leakage of wash water or cleansing fluid from the tub around the shaft 52 is prevented by this novel packing means.

The open top of the tub is normally closed by a cover 101 having a hinge 102 at one side and a finger grip piece 103 at the other side.

At one side of the tub is secured a liquid soap dispenser comprising a reservoir 104 fastened to the wall 48 by bolts 105 and adapted to contain a relatively large supply of soap. To this chamber is connected a measuring pump 106 into the upper portion of which a charge of fluid soap is drawn by the piston on piston rod 107, and upon a downward movement of the piston and rod, discharged into the tub through a discharge tube or nozzle 108 so located that the ejected charge will be in the general direction of the movement of the mass of material and cleansing solution within the tub during the washing operation.

When the gyrator is alternately rotated or oscillated, with materials to be cleansed and the cleansing liquid in the tub, the liquid is given a radially outward and upward movement toward the upper part of the tub, then an inward movement, then a downward movement toward the cone 53 of the gyrator, the liquid also progressing, in its whirling action, about the tub first in one direction and then in an opposite direction so that the resultant motions are substantially gyratory ones, as helical movements about a ring having a circular cross-section. In this way the washing and washable materials are given a turbulent swirling action. As a result of this action imparted to the cleansing liquid by the gyrator, the water in turn imparts a similar action to the fabrics. Goods are thus whipped, whirled and dashed around in the sieving, whirling, turbulent action set up by the gyrator. Thus the fabrics are given a quick, snappy, sieving, whirling, reversing double action, produced by the gyrator, doubling the clothes first one way and then the other until every thread in the fabric is acted upon an untold number of times, somewhat like the cracking of a whip-lash in all directions. While it is very difficult to describe the action of the water and the movement of the clothes therein produced by the rapid reciprocation of the gyrator or impeller in the container, whereby the materials are thoroughly cleansed while held in suspension by the peculiar and novel movement and action of the water, I believe that the foregoing description will easily enable anyone skilled in the art to readily construct and operate my invention and fully utilize the herein disclosed method. At or before the start of the operation, and during the operation of the machine, as desired, charges of liquid soap may be ejected into the moving mass in the tub.

The plate 47 has a drain port 109 with which may be connected a hose normally supported at its free end at one side of the machine but which may be lowered to drain the tub of its contents. The plate 47 is formed with a shallow depression 110 surrounded by the flange 50 and having an inclined bottom 111 extended from one side to the other of the shaft 52 and chamber 93, in order to permit efficient drainage of the fluids in the tub through drain port 109.

It is of course understood that the specific description of structure set forth above may be departed from without departing from the spirit of my invention as set forth in this specification and the appended claims.

Having now described my invention, I claim:

1. The method of cleansing fabrics in a tub consisting in agitating a washing fluid in such a way as to create positively driven violently flowing currents moving away from and back to the plane of the source of agitation, and also around the tub in one direction in a plane approximately parallel with the plane of agitation, and then causing it to move away from and back to the plane of the source of agitation and in a reverse direction in a plane approximately parallel with the plane of agitation so as to bodily and forcibly cause the fabrics in the tub to travel in substantially the same paths as the fluid, whereby thorough cleansing of the fabric is effected without substantial contact with rubbing surfaces.

2. A washing machine comprising in combination, a container having a substantially uninterrupted inner surface, a rotary reciprocatory disk-like impeller near the bottom of the container having upstanding flanges thereon so arranged as to violently force water in the container laterally and upwardly in one gyratory direction and then laterally and upwardly in an opposed direction, whereby the materials being washed will be substantially suspended by the water and thoroughly cleaned while thus suspended, and motor-driven means extending through the bottom of the container to rotatably reciprocate the impeller.

3. A washing machine comprising in combination, a container having a substantially uninterrupted inner surface, a rotary reciprocatory disk-like impeller mounted adjacent the bottom of the container, so constructed and arranged that when water and materials to be cleaned are placed in the container and the impeller is reciprocated, the water will first be violently forced laterally and upwardly in one gyratory direction and then laterally and upwardly in an opposed gyratory direction, so that the materials being cleaned will be suspended by the movement of the water, and the water forced through and around the materials to thoroughly cleanse them, while said materials are substantially out of rubbing contact with the mechanical parts of the machine, and motor-driven means for rapidly driving the impeller.

4. In a washing machine the combination of a tub for containing a cleansing substance and the materials to be cleansed, said tub having an outwardly and upwardly inclined portion, an impeller cooperating with the said inclined portion of the tub to force said cleansing substance and materials to be cleansed outwardly in a direction substantially parallel with said inclined portion, and power means for oscillating said impeller.

5. In a washing machine the combination of a tub adapted to contain wash water and goods to be washed, said tub having a flared portion, a liquid impeller in said tub, having a depressed portion, said liquid impeller cooperating with said flared portion to swirl said wash water and goods with a substan-

tially gyratory movement, and power means to alternately rotate said liquid impeller.

6. In a washing machine comprising driving power means, the combination of a tub for containing a cleansing substance and materials to be cleansed, a liquid impeller mechanism driven by said power means for oscillating said liquid impeller, said liquid impeller having flanges and a radially depressed portion operative to upwardly swirl said cleansing substance and material.

7. In a washing machine comprising a driving power means, the combination of a tub for containing washing and washable materials, a liquid impeller, means operable to alternately rotate said liquid impeller, said liquid impeller being provided with upstanding flanges and a depressed portion on each side of each of said flanges and operative to swirl said materials with a substantially gyratory movement.

8. In a washing machine comprising driving power means, the combination of a tub for containing a cleansing substance and materials to be cleansed, a liquid impeller, mechanism driven by said power means for alternately rotating said liquid impeller, said liquid impeller having upwardly and radially extending flanges and a radially depressed surface operative to upwardly swirl said cleansing substance and materials.

9. In a washing machine comprising driving power means, the combination of a tub adapted to contain washing and washable materials, a liquid impeller in said tub and operated by said means, said liquid impeller having a centrally raised portion and radially depressed portion, and operable to swirl said materials with a substantially gyratory movement.

10. In a washing machine having driving power means, the combination of a tub adapted to contain washing and washable materials, a liquid impeller in said tub and operated by said means, said liquid impeller having a centrally raised portion, a radially depressed portion and flanges extending radially from said centrally raised portion, said liquid impeller operable to swirl said materials with a substantially gyratory movement in said tub.

11. In a washing machine having driving power means, the combination of a tub adapted to contain washing and washable materials, a liquid impeller in said tub and operated by said means, said liquid impeller having a central conodial portion, an inclined peripheral portion and an intermediate trough portion, said liquid impeller operating to swirl said materials with a substantially gyratory movement in said tub.

12. In a washing machine comprising driving power means, the combination of a tub for holding a cleansing fluid and materials to be cleansed, a drain plate at the bottom of said tub and having a sloping bottom portion extending from one side to the other of the center of said tub, and an eccentrically located drainage connection attached to said inclined portion, a shaft extending through said plate and a liquid impeller on said shaft for giving said substance and material turbulent motion.

13. In a washing machine comprising a driving power means, a tub, an alternating rotary liquid impeller having a plate formed with an annular depression, a raised central portion and upstanding flanges in said depression, said plate, depression, central portion and flanges operating on the contents of the tub to give the contents a gyratory movement.

14. An agitating member for a washing machine comprising a cup-shaped disk having a frusto-conical portion rising from the center thereof, the vertical elements of which are concave so that the surface of said portion merges into the surface of said disk, and a round upwardly tapering portion projecting above said frusto-conical portion and terminating in a rounded surface, and narrow radial wings projecting from said latter portion and extending along the sides thereof and across the surface of said disk and having rounded outer edges merging into the concave surface of said disk.

15. An impeller for a washing machine comprising an annular trough, a stem rising centrally from said trough and having a plurality of circumferentially spaced radial wings projecting therefrom and extending along its sides and across the surface of said trough, the top surface of said wings above said trough curving downwardly and inwardly.

16. A rotatable impeller for a washing machine adapted to be disposed in a liquid containing receptacle comprising a dish-shaped member having a central upstanding tapered stem with a rounded upper end, ribs extending across said dish and upwardly along the side of said stem and having rounded upper edges merging into the rounded surface of said stem.

17. In a washing machine, a tub for containing wash water and goods to be washed, an oscillatory disk-like agitator in said tub near the bottom thereof and having a plurality of upstanding water-impelling projections extending from one face thereof, said projections being of substantial height contiguous to the periphery of the agitator and decreasing in height toward the center whereby side faces of substantial area are provided, and while the agitator is oscillated the water and goods will be vigorously forced laterally upwardly in gyratory paths to violently force the water through, between and around the goods and thoroughly cleanse them while

they are sustained in the water free from any substantial contact with rubbing surfaces, and motor-driven means for oscillating the agitator.

18. In a washing machine an agitator and power means for imparting alternate rotative movement thereto, said agitator consisting of a substantially disk-like imperforate body and a plurality of liquid impelling projections extending from one face thereof, said projections being of a maximum depth contiguous to the periphery of said body and having their free edges inclined inwardly to the center of the agitator, leaving the central portion of said body free of water impelling projections.

19. In a washing machine, a tub having side walls and a bottom, a driving shaft extending through said bottom into the tub, an agitator fixed to said shaft to oscillate therewith, power means for oscillating said shaft and agitator, said agitator comprising a substantially circular base having an upstanding central portion, blades extending upwardly from the upper face of said base, the blades being of greatest height adjacent the marginal edge of the base, decreasing in height toward the center and merging into said upstanding central portion, the union between the agitator and the shaft permitting removal of the former from the latter by an upward movement, the oscillation of the agitator causing the blades to set up violent movements of the fluid and tub contents outwardly away from the agitator, upwardly, inwardly and then back toward the agitator, there also being superposed on this circulatory movement a movement of the fluid and tub contents first in one direction circumferentially of the tub and then in the other, so that the articles being washed will be thoroughly cleansed without any material rubbing of the blades thereagainst.

20. In a washing machine, a tub, a driving shaft extending into the tub, an agitator secured to said shaft to oscillate therewith, power means for oscillating said shaft and agitator, said agitator comprising a substantially circular body portion having blades extending therefrom on the face presented to the material being washed, the blades adjacent the marginal edge of the body portion being of a substantial dimension in a direction at right angles to the body portion, said body portion being free of any holes or openings of substantial dimensions, said blades and adjacent portions of the body portion of the agitator when the agitator is oscillated throwing the fluid in the tub, and material being washed, violently outwardly from the edge of the agitator whereby it will flow in circulatory paths away from the agitator, along the sides of the tub, then inwardly and back toward the agitator, this cycle being continuously repeated.

21. In a washing machine, a tub having a substantially uninterrupted inner surface and adapted to contain cleansing liquid and materials to be washed, the bottom of the tub merging smoothly into the sides, an oscillatory liquid impeller mounted adjacent the bottom of the tub, having on its upper surface upstanding wing-like means of substantial height and length so constructed and arranged that when the impeller is given a rapid rotary oscillatory movement the cleansing liquid and materials to be washed will be violently forced laterally from the impeller then upwardly along the side of the tub, then away from the tub side and back toward the impeller, this cycle being continuously repeated to force the cleansing liquid through and around the materials to be washed to thoroughly cleanse them while they are substantially out of rubbing contact with the impeller, and motor-driven means for imparting to said impeller a rapid rotary oscillatory movement.

22. A washing machine comprising in combination, a tub for containing cleansing liquid and materials to be cleansed, said tub having a bottom portion, and an upwardly extending wall portion the interior surface of which is free from rubbing projections, the juncture of the bottom portion with the upwardly extending portion being inclined to facilitate the movement of currents outwardly and upwardly and along the interior surface of the tub, a rotary reciprocatory impeller mounted in the tub adjacent its bottom, the upper surface area of which is considerably less than the horizontal cross-sectional area of the tub through its upwardly extending portion, the margin of said impeller being spaced a substantial distance away from the upwardly extending portion of the tub, a rotary reciprocatory drive shaft extending upwardly through the bottom of the tub into the interior thereof, the impeller being mounted upon said shaft for movement therewith in a fixed plane, said impeller having on its upper surface a plurality of upstanding wing-like blades, each of which is of substantial height and length, and provided with lateral impelling faces of substantial area, the impeller and tub being so constructed and arranged relative to each other as to cooperate while the impeller is reciprocated for whipping the fluid and violently forcing it first in one and then in an oppositely upward circulatory direction against the interior of the tub and through and around the materials being washed, and substantially suspending the materials in the fluid by the moving fluid, and means for imparting a rapid rotary reciprocatory motion to the said shaft and impeller.

23. A washing machine comprising in combination, a tub for containing cleansing liquid and materials to be cleansed, said tub hav-

ing a bottom portion and an upwardly extending wall portion, the interior surface of which is free from rubbing projections, a rotary reciprocatory impeller mounted in the tub adjacent its bottom, having a base and a plurality of blades, each of which is of substantial height and lateral area, and a central portion projecting upwardly from the base, the upper surface area of the base being considerably less than the horizontal cross-sectional area of the tub through its upwardly extending portion, the margin of said base being spaced a substantial distance away from the upwardly extending portion of the tub, said tub and impeller being so constructed and positioned relative to each other that when the impeller is rapidly reciprocated each blade and its adjacent portion of the impeller base will simultaneously drive the cleansing fluid in one and then an opposite outward upward circulatory direction toward and around the clothes, and act in cooperation with the interior of the tub to cause violently flowing opposed currents of liquid to meet and flow inwardly and downwardly toward the central portion of the tub, and substantially suspend the materials in the fluid while being washed, a rotary reciprocating drive shaft extending upwardly through the bottom of the tub into the interior thereof for supporting the impeller for movement in a fixed plane, and power means for rapidly reciprocating the shaft and impeller for the purposes set forth.

24. In a washing machine, a tub adapted to contain a washing fluid and materials to be cleansed, a rotatively reciprocatory driving shaft extending through the bottom of the tub at the center thereof, a liquid impeller mounted on said shaft near the bottom of the tub, the outer portion of the impeller being spaced a considerable distance from the interior side surface of the tub and rotatively reciprocatory with the shaft, said impeller comprising a base, a central portion projecting upwardly therefrom and a plurality of uniform blades projecting upwardly from the base and equally spaced and extended radially from the central portion, each blade being of greater area at a position contiguous to the edge of the base than at the center thereof, and means for imparting rotary reciprocatory motion to said shaft and the impeller mounted thereon, the impeller and the tub being so constructed and relatively positioned as to cooperate while the impeller is reciprocated to cause the liquid to be violently forced laterally and upwardly against and in one direction, circumferentially around the inner surface of the tub, and laterally and upwardly against and in an opposite direction, circumferentially around the inner surface of the tub whereby the materials will be thoroughly cleansed while substantially suspended in the water.

25. A washing machine comprising in combination, a tub, said tub having a main body portion, the interior of which is substantially free of scrubbing projections, and a bottom portion, a rotary reciprocatory liquid impeller mounted for operation in a fixed plane in the tub, the outer portion of which is spaced a considerable distance from the body portion of the tub and having a plurality of blades projecting therefrom, said tub and impeller being so constructed and positioned relative to each other that when the impeller is rapidly reciprocated each blade and its adjacent portion of the impeller base will simultaneously drive the cleansing fluid in one and then an opposite outward circulatory direction away from the plane of the impeller through and around the clothes, and act in cooperation with the interior of the tub to cause violently opposed currents of fluid to meet and flow inwardly and in a general vertical direction toward the impeller, whereby the materials are substantially suspended in the fluid and cleansed while thus suspended, a driving shaft extending into the tub on which the impeller is mounted for movement therewith, and power means for rapidly reciprocating the shaft and impeller.

26. In a washing machine for cleansing fabrics by forcing cleansing fluid through them while substantially suspended by the action of the fluid, as distinguished from pulling or pushing the fabrics through the fluid or against scrubbing surfaces, or otherwise scrubbing them by mechanical means, a tub, a substantially imperforate rotary reciprocatory impeller mounted to operate in a fixed plane having blades of substantial height and area projecting therefrom in a direction toward the fabrics while they are being cleansed, said tub and impeller being so constructed and arranged as to cooperate while the impeller is in operation for whipping the fluid and violently forcing it outwardly, upwardly and in a general vertical and circulatory movement and circumferentially of the tub first in one and then in an opposite direction and through and around the materials, and substantially suspending the materials in the fluid while being washed, and power means for rapidly reciprocating the impeller.

27. A washing machine comprising in combination, a tub having an inner surface free from rubbing projections, said tub having a vertical portion and a bottom portion inclined outwardly and upwardly toward and merging with the vertical portion, an imperforate rotary reciprocatory impeller mounted for operation in a fixed plane near the bottom of the tub, the outer portion of which is spaced a considerable distance from the interior of the vertical portion of the tub, said impeller comprising a base of substantial area, a plurality of uniform radially dis-

posed and equally spaced blades projecting upwardly at substantially right angles from the base, each blade being of substantial height and lateral area, and a central portion projecting upwardly from the base, a driving shaft extending through the bottom of the tub on which the impeller is mounted for movement therewith, and means mounted beneath the tub for imparting to the shaft and impeller a rapid rotary reciprocatory motion.

28. In a washing machine, a tub having a substantially smooth inner surface free from rubbing projections, adapted to contain cleansing liquid and materials to be cleansed, said tub having a vertical portion and a portion inclined downwardly and inwardly from the vertical portion and merging therewith, an imperforate rotary reciprocatory impeller mounted near the bottom of the tub, the outer portion of which is spaced a considerable distance from the interior of the vertical portion of the tub, comprising a base of substantial area and a plurality of uniform equally spaced radially disposed blades projecting upwardly from the base, each blade being of substantial height and lateral area at its outer end and decreasing in its lateral area toward its inner end, and a central portion projecting upwardly from the base into which the inner end of each of said blades merges, a driving shaft extending through the bottom of the tub on which the impeller is mounted for movement therewith, and means mounted beneath the tub for imparting to said shaft and impeller a rapid rotary reciprocatory motion.

29. In a washing machine, a tub adapted to contain cleansing liquid and materials to be cleansed, a rotary reciprocatory impeller mounted adjacent the bottom of the tub, comprising a substantially imperforate base of substantial area and blades of substantial height and lateral area projecting from the body of the impeller toward the materials while being washed, said impeller and tub being so constructed and arranged that they will cooperate, when the impeller is rapidly reciprocated, to cause the liquid to be positively forced outwardly, upwardly and circumferentially along the interior of the tub in one general direction, and then outwardly, upwardly and circumferentially along the tub in the opposite general direction, whereby the materials being washed will be cleansed, the change in direction of movement of the impeller being accomplished suddenly and forcibly to whip the liquid and vigorously force it first in one direction and then in the opposite direction through and around the materials while substantially suspended therein by the action of the liquid, and power means for rapidly reciprocating the impeller.

30. In a washing machine, a tub having its bottom merging smoothly into its side portion to facilitate the movement of laterally upward circulatory currents, and having the interior of its side portion substantially smooth and free from rubbing elements, for containing a cleansing fluid and materials to be cleansed, a rotary reciprocatory impeller mounted near the bottom of the tub, said tub and impeller being so constructed and arranged as to act in cooperation while the impeller is in operation, for whipping the fluid and violently forcing it first in one and then in an opposite laterally upward circulatory general direction against the interior of the tub and through and around the materials, and suspending the materials in the fluid by the moving fluid while being washed, said impeller comprising a substantially imperforate base and blades of substantial height and area projecting upwardly therefrom, and motor driven means extending through the bottom of the tub for imparting to the impeller a rapid rotary reciprocatory motion, substantially as described.

31. In a washing machine, a tub having a substantially smooth interior free from rubbing elements for containing a cleansing fluid and materials to be cleansed, a rotary reciprocatory impeller mounted near the bottom of the tub, said tub and impeller being so constructed and arranged as to cooperate while the impeller is operated for violently forcing the fluid first in one and then in an opposite outwardly and upwardly circulatory general direction against the interior of the tub and through and around the materials, and substantially suspending the materials in the fluid while being washed, said impeller comprising a substantially imperforate base and blades of substantial height and area projecting upwardly therefrom, and motor driven means extending through the bottom of the tub for imparting to the impeller a rapid rotary reciprocatory motion.

32. In a washing machine for cleansing fabrics by forcing cleansing fluids through them while substantially suspended by the action of the fluids as distinguished from pulling or pushing fabrics through fluids or against scrubbing surfaces or otherwise scrubbing them by mechanical means, a tub, a rotary reciprocatory impeller mounted for normal operation in a fixed plane, said tub and impeller being so constructed and arranged to cooperate while the impeller is in operation for whipping the fluid and violently forcing it first in one and then in an opposite outward, axial and circulatory general direction against and approximately parallel to the interior of the tub and through and around the materials and substantially suspending the materials in the fluid while being washed, said impeller comprising an imperforate base and blades of substantial height and area projecting therefrom in a direction toward the materials being cleansed, and power

eans for rapidly reciprocating the impeller.

33. In a washing machine, a tub substantially free from scrubbing projections for ontaining a cleansing fluid and materials to e cleansed, a rotary reciprocatory impeller ounted near the bottom of the tub, said impeller comprising an imperforate base and lades of substantial height and area projecting upwardly therefrom, said tub and npeller being so constructed and arranged s to act in cooperation while the impeller is perated for whipping the fluid and violently orcing it first in one and then in an opposite utwardly upwardly circulatory general direction, against the interior of the tub and ward and through the materials, and subantially suspending the materials in the uid while being washed, and power means or rapidly reciprocating the impeller.

34. In a washing machine, a tub whose terior is free from substantial scrubbing eleents adapted to contain a cleansing fluid nd materials to be cleansed, a driving shaft xtending into the tub through the bottom ereof, an impeller on said shaft to oscillate erewith, power means for oscillating said haft and impeller, the impeller comprising n imperforate body portion, and blades exending from said body portion on the face resented to the materials being cleansed, the lades being of a substantial dimension in a irection at right angles to the body portion, id tub, blades and adjacent portions of the ody portion of the impeller being so conructed and arranged in the tub relative to s interior that when the impeller is oscilated the fluid in the tub will be thrown vioently outward against and around the inerior of the tub, from the edge of the impeller, first in one and then in the opposite eneral direction, whereby the fluid will be riven in circulatory paths away from the mpeller, along the sides of the tub in opposed directions, then inwardly and toward he impeller, this cycle being continuously epeated while the materials are substantially spended by the fluid and out of substantial rubbir contact with the impeller or tub.

35. A washing machine comprising in comination, a tub for containing water and goods o be washed, said tub being substantially free rom rubbing projections, a rotary reciproatory impeller in the tub having flange-like eans extending therefrom of substantial eight and lateral area, said tub and impeller, ogether with its flange-like means, being so onstructed, proportioned and arranged with espect to each other that while the impeller in operation the fluid will be rigorously oved about in devious paths within the tub, nd the resultant general direction of the ovement of the cleansing fluid and the maerials to be cleansed is normally radially outard from the central portion of the tub, then rtically, and a general rotary progression about the inside of the tub first in one and then an opposite direction, and then inwardly toward the impeller whereby the fabrics will be cleansed while substantially sustained by the action of the fluid, and will be freely and continuously driven about in the fluid by the movements thereof in a turbulent manner, and in devious paths, and motor driven means for rapidly reciprocating the impeller for the purposes set forth.

36. In a washing machine, a tub free of scrubbing elements for containing a cleansing fluid and materials to be cleansed, an imperforate rotary reciprocatory impeller, blades on the impeller, said tub and impeller together with its blades being so constructed and arranged with respect to each other that while the impeller is in operation the fluid will be rigorously moved about in devious paths within the tub, and the resultant general direction of the movement of the cleansing fluid is normally radially outward from the central portion of the tub, then vertically and in a general rotary progression about the inside of the tub, first in one and then in an opposite direction, and then inwardly toward the impeller, whereby the fabrics will be cleansed while substantially sustained by the action of the fluid and will be freely and continuously driven about in the fluid by the movements of the fluid in a turbulent manner and in devious paths, and power means for imparting reciprocations to the impeller.

37. In a washing machine, a tub for containing fluid and materials to be cleansed, a rotary reciprocatory impeller mounted for oscillation in a substantially fixed plane having a substantially imperforate base and a plurality of blades, said tub and impeller being so constructed and positioned relative to each other that when the impeller is rapidly reciprocated each blade and its adjacent portion of the impeller base will simultaneously drive the cleansing fluid in one and then an opposite outward, upward, circulatory direction and act in cooperation with the interior of the tub to cause violently opposed currents of fluid to meet and flow inwardly and downwardly toward the central portion of the tub and substantially suspend the materials in the fluid while being washed, and power means for rapidly reciprocating the impeller.

38. The method of washing fabrics by forcing cleansing liquid through and around them while substantially suspended by the action of the fluid, as distinguished from pulling fabrics through the fluid against scrubbing corrugations, or otherwise scrubbing them by mechanical means, comprising immersing the fabrics in a washing fluid in a container, then vigorously and rapidly impelling the washing fluid in one and then in an opposite outward circulatory direction away from the plane of the source of impul-

sion and through the fabrics and circumferentially along the interior of the container in rapid succession, and causing these violently opposed currents of fluid to meet and flow inwardly and toward the central portion of the container, and toward the source of impulsion thereby substantially suspending the fabrics in the fluid and cleansing them while thus suspended.

39. The method of washing fabrics by forcing cleansing fluid through them while substantially suspended by the action of the fluid, as distinguished from pulling fabrics through the fluid against scrubbing corrugations, or otherwise scrubbing them by mechanical means, comprising immersing the fabrics in a washing fluid in a container, then vigorously agitating the washing fluid and rapidly forcing it toward the fabrics and away from the plane of the source of agitation vertically along the interior surface of the container first in one and then in an opposite circumferential direction, back and forth through and around the fabrics, and causing the violently moving opposed currents of liquid to meet and flow inwardly and vertically toward the source of agitation whereby the fabrics are caused to be freely moved about by the action of the fluid and cleansed while thus moved.

In witness whereof, I hereunto subscribe my name to this specification.

HOWARD F. SNYDER.

DISCLAIMER

1,866,779.—*Howard F. Snyder*, Newton, Iowa. WASHING MACHINE. Patent dated July 12, 1932. Disclaimer filed February 23, 1937, by the assignee, *The Maytag Company*.

Hereby enters its disclaimer of claims 1 and 38 of said Letters Patent.

[*Official Gazette April 6, 1937.*]

COMPARATIVE DRAWINGS SHOWING PLAINTIFF'S AND DEFENDANT'S

PLATE 1.

Snyder Patented Washing Machine.
Fig. 1 of Snyder Patent No. 1,866,779, July 12, 1932,
Filed June 14, 1922.
This also shows Plaintiff's Exhibit 9, Maytag Gyrator type machine sold in February, 1922.

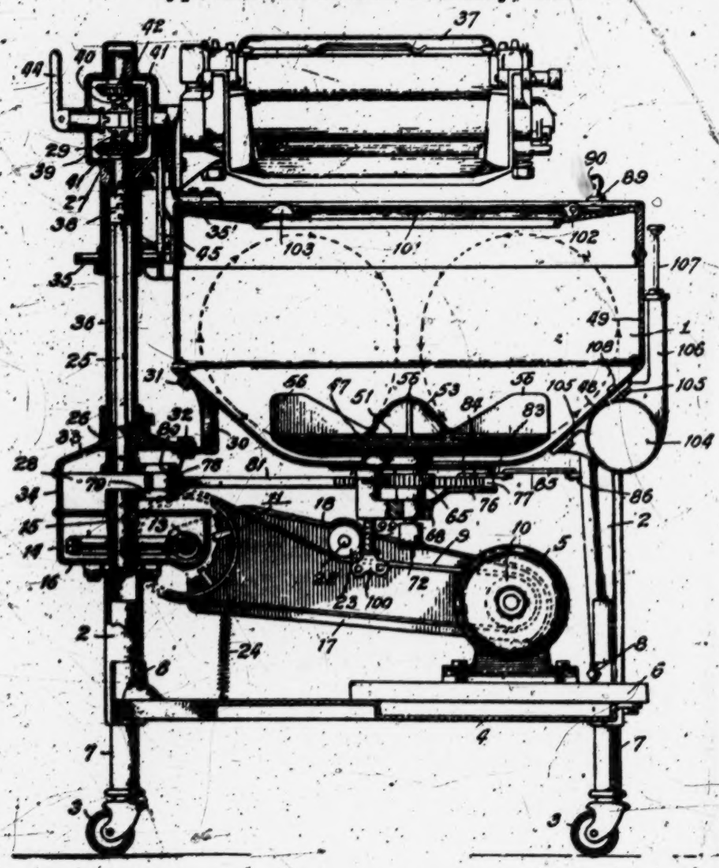


PLATE 2.

Sectional View of Plaintiff's Exhibit 10.

Maytag Snyder Gyrator Type Washing Machine.
Square Tub.

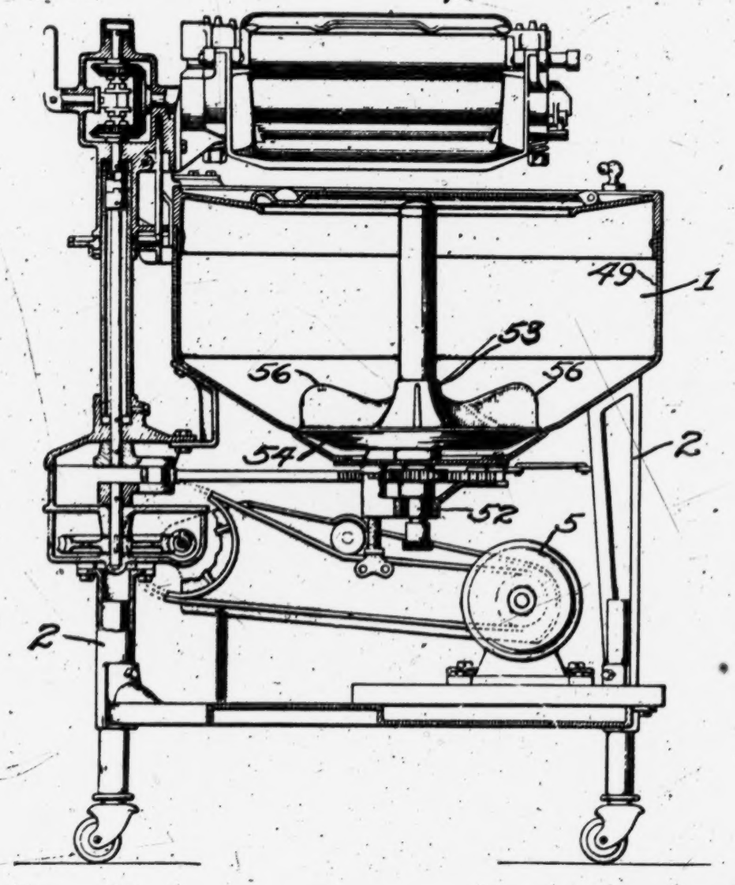
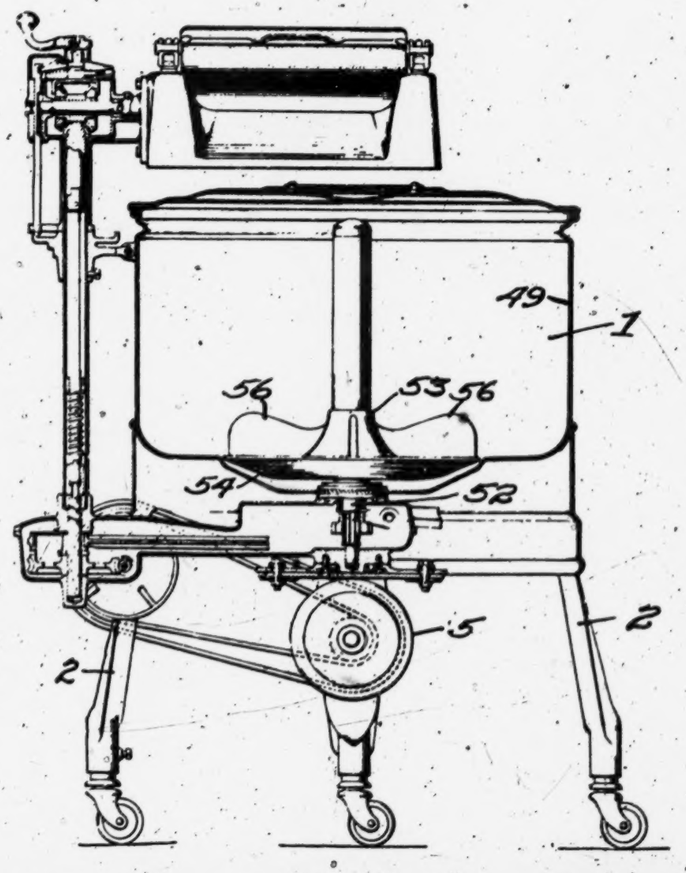


PLATE 3.

Sectional View of Plaintiff's Exhibit 11.

Maytag Snyder Gyrator Type Washing Machine.
Round Tub.



Secti

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Wash

PLAINTIFF'S AND DEFENDANT'S MACHINES ARE ALIKE IN ALL IMPORTANT FEATURES OF CONS
ARRANGEMENT OF PARTS AS SHOWN IN THESE DRAWINGS.
ADMITTEDLY THEY ALL OPERATE THE SAME WAY AND SECURE THE SAME RESULT

DANT'S MACHINES.

PLATE 4.

Sectional View of Plaintiff's Exhibit 4.

Defendant's "THOR" Gyrator Type Washing Machine Charged to Infringe.

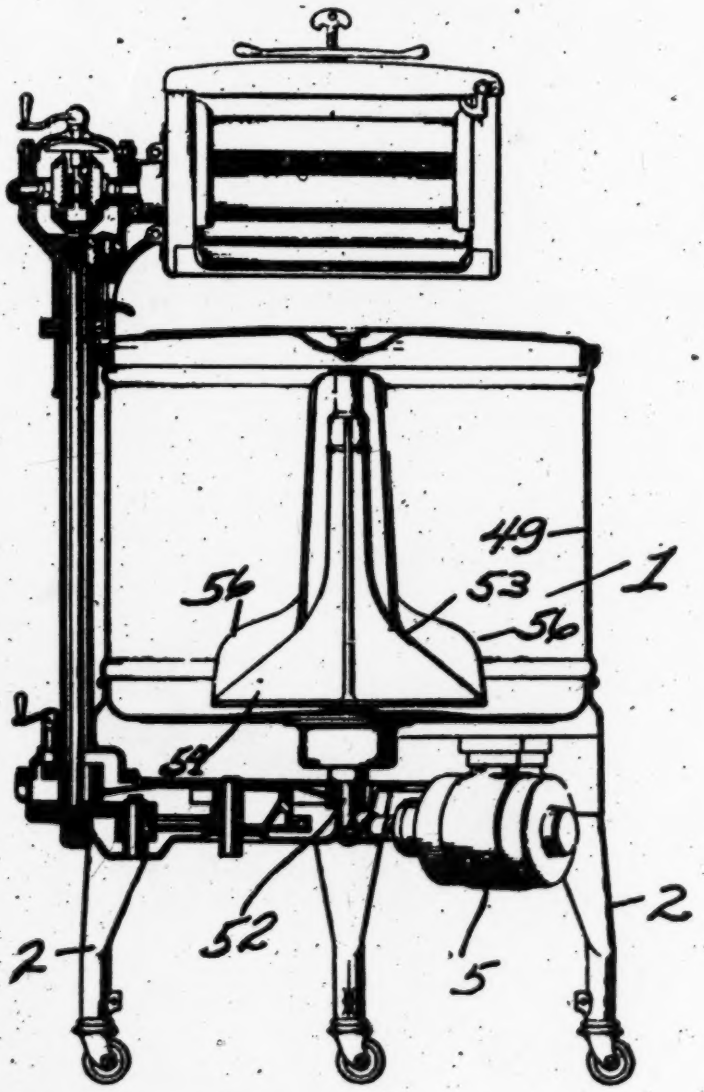
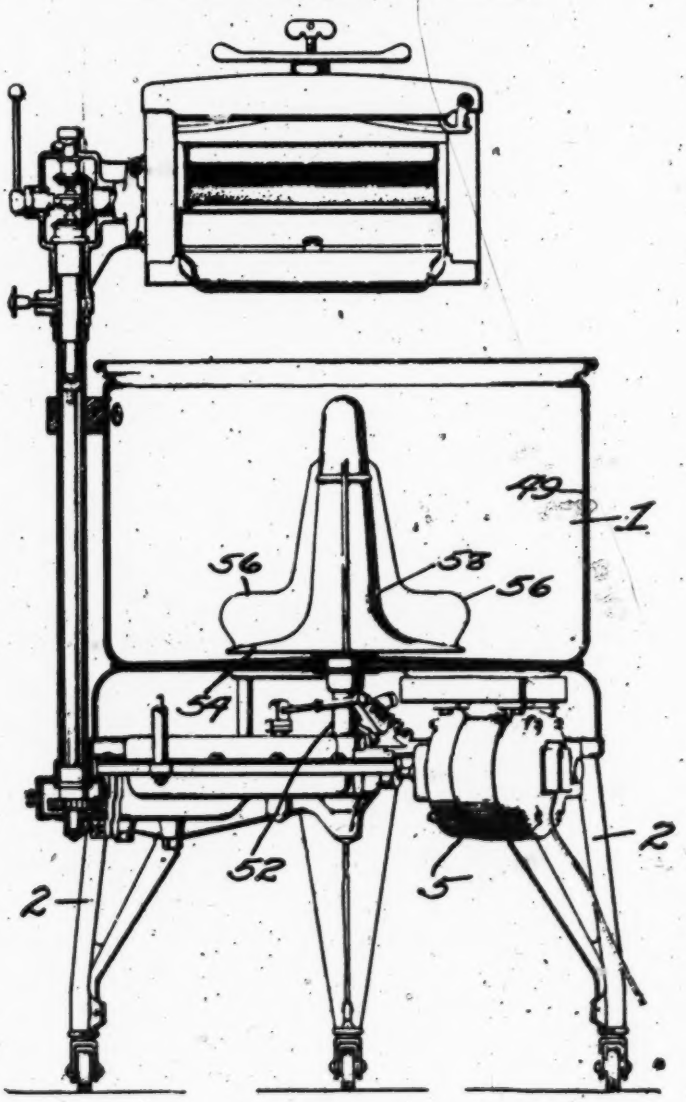


PLATE 5.

Sectional View of Plaintiff's Exhibit 3.

Defendant's "Easy" Gyrator Type Washing Machine Charged to Infringe.



OF CONSTRUCTION,

RESULT.